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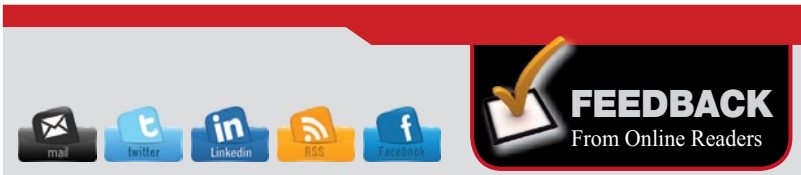

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SHUBHENDU
PARTH

[OPENING NOTE]

Twenty-five years of mobile, and how

India is moving towards silver jubilee occasion of the first mobile call that was made on 31 July 1995. To say that a lot has changed in the 25 years since the first symbolic call was made by the then West Bengal Chief Minister Jyoti Basu to Union Communications Minister Sukh Ram, will be an understatement.

With over 1.15 billion mobile subscriber base (as on 31 January 2020), a wireless teledensity of 87.45%, and a broadband subscriber base of 654.3 million, the country has come a long way.

The opening of the telecom sector not only led to a huge investment by global telecom majors, the telecom-backed IT infrastructure further led to the birth of massive call centre, BPO, and KPO sectors, as well as new-age digital companies, including Jio Platforms that has recently raised over 115,693.95 crore from global investors, including Facebook.

India's mobile journey is also an interesting story of how the country skipped the entire analog first-generation (1G) wireless phone service of the 1980s, jumping straight to GSM and 2G digital telecommunication.

In an Economic Times article published in 2015, Umang Das, the then CEO of Modi Telstra had shared the interesting story of how it all started in mid-1994. According to him, Basu had invited B K Modi, who was then chairman of Modi Telstra (later Spice), and Das for a meeting at the Writers' Building. During the meeting Chief Minister Basu expressed that he would like Calcutta to become India's first city with a mobile network.

Before the meeting ended, Modi had made his commitment to the launch date: 31 July 1995. Soon, his team from India landed up in Australia to discuss the plans of rolling out a mobile network in Calcutta with their JV partner Telstra.

Their hunt for know-how led them to Nokia, which had the cutting-edge technology but was initially apprehensive. However, Modi and his team soon worked out the modalities and the three companies were able to meet the promise in nine months.

Much water has flowed under the bridge since then; from opening-up of the sector to over 122 licensees at one point of time, the industry went through major ups and downs – policy changes and few scams on the way – and also a major market disruption ushered in by RJio in 2016 that led to a wave of exits and consolidation.

While, Modi Telstra, the country's first mobile operator does not exist anymore, the private sector telecom service providers hold the sway in India's mobile market – 89.39% of the wireless subscriber base, with BSNL and MTNL managing to hold just over 10%.

On the technology front, the country has upgraded to 4G and is readying for rolling out 5G services. Overall, the network technologies have evolved to a level unimaginable in the 1990s, with the entire nation effortlessly working from home during the recent lockdown and almost everything is now moving from owned-economy to the service-on-a-tap model.

It's time to celebrate the call that changed India forever.

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INTERMEDIARY MATTERS

Trump's order to prevent censorship by social media platforms has highlighted the fault line that always existed. Is it time for India to strengthen its legal provisions as well?

BY SHUBHENDU PARTH

The Executive Order by the US President, late last month, on preventing online censorship has its genesis in Donald Trump's long-standing disagreement with the way social media platforms operate. Trump has repeatedly argued that Section 230 of the Communications Decency Act, which confers immunity to internet companies for the content they host, but is generated by their users, allows platforms like Facebook, Google and Twitter to censor content based on their political leanings.

The section mandates that no provider or user of an interactive computer service shall be treated as the publisher or speaker of any information provided by another information content provider. That is exactly where the problem lies, and it is, in a way similar to the situation in India where the online platforms tend to hide behind Section 79 of the IT Act which states that an intermediary shall not be liable for any third party information or data made available by it or hosted by it.

However, the triggers for Trump's action and the recent campaign and PIL filed at the Supreme Court of India is different. While Trump's order is aimed to curb "selective" censorship by the social media platforms, the PIL filed by CRIS governing council member Vinit Goenka seeks a writ, order or direction by the court to the government to put in place a mechanism to check contents and advertisements that spread hatred, are seditious, instigative, separatist, hate-filled, and divisive, as also against the spirit of the Union of India.

"When large, powerful social media companies censor opinions with which they disagree, they exercise a dangerous power. They cease functioning as passive bulletin boards, and ought to be viewed and treated as content creators," the Trump order states.

It further added that social media and online platforms have gained immense power over the years since people follow the news, stay in touch with friends and family, and share their views on current events through them. "As a result, these platforms function in many ways as the 21st century equivalent of the public square," it stated. "Twitter, Facebook, Instagram, and YouTube wield immense, if not unprecedented, power to shape the interpretation of public events; to censor, delete, or disappear information; and to control what people see or do not see."

What angered Potus?

"I love Twitter.... it's like owning your own newspaper--- without the losses," Trump had tweeted on 10 November 2012. From then till September 2018 the Trump-Twitter relation seemed ok. However, on 26 October 2018, he tweeted about Twitter removing many people from his account. In December the same year, he alleged that Facebook, Twitter, and Google was biased toward the Democrats. "Twitter, in fact, has made it much more difficult for people to join @realDonaldTrump," he tweeted. From then onwards, the relation between the two was on a constant slide, even though Trump continued to use Twitter in a big way.

What triggered the current spat and the Executive Order was the decision taken by Twitter on 26 May 2020 to fact-check him on two tweets about California using mail-in ballots to ensure a "rigged election". While Twitter highlighted this as "potentially misleading", it also decided to hide the third tweet from Trump on grounds that it glorified violence.

"We added a label to two @realDonaldTrump Tweets about California's vote-by-mail plans as part of our efforts to enforce our civic integrity policy. We believe those tweets could confuse voters about what they need to do to receive a ballot and participate in the election process," Twitter Safety team said clarifying on their decision to act.

On the other post of Trump, Twitter posted that it violated the rules about glorifying violence. "However, Twitter has determined that it may be in the public's interest for the tweet to remain accessible." The warning was accompanied by a link to its policies about public interest exceptions.

Warning those protesting in Minneapolis against the killing of George Floyd, the US President had earlier tweeted: "When the looting starts, the shooting starts." This, reports indicate, he said quoting the former Miami police chief Walter Headley, who in December 1967 had warned of violent reprisals to protests over stop-and-frisk tactics.

Social media and online platforms have gained immense power over the years since people follow news and share their views on current events through them.

According to a Guardian report, "for people visiting Trump's Twitter timeline, or seeing the tweet retweeted on their feed, the warning obscured the content unless it was tapped for viewing." The report also mentions that users who tried to reply to the tweet were presented with a second notice that read: "We try to prevent a tweet like this that otherwise breaks the Twitter rules from reaching more people, so we have disabled most of the ways to engage with it."

While the replies on the original tweet by Trump were hidden by the company, its spread was also limited by Twitter's algorithm. The following day, when Trump's team tried to send similar tweets from the official White House account, placing the President's words in quotation marks, Twitter decided to hide it as well.

Making a reference to the incidents, the Executive Order highlighted that online platforms were engaging in selective censorship that was harming the national discourse in the US. "Tens of thousands of Americans have reported, among other troubling behaviors, online platforms 'flagging' content as inappropriate, even though it does not violate any stated terms of service; making unannounced and unexplained changes to company policies that have the effect of disfavoring certain viewpoints; and deleting content and entire accounts with no warning, no rationale, and no recourse," it stated justifying the order to review the immunity and draft stringent rules to stop unilateral and unexplained censorship.

"The immunity should not extend beyond its text and purpose to provide protection for those who purport to provide users a forum for free and open speech, but in reality use their power over a vital means of communication to engage in deceptive or pretextual actions stifling free and open debate by censoring certain viewpoints," the order stated.

Is Twitter anti-India?

As a platform, Twitter has always tried to hold the holier-than-thou ground when it comes to its unilateral censorship decision, while it hides behind the "intermediary curtain" when questions are raised about its decision to allow certain tweets.

While Twitter was quick to identify and flag President Trump's tweet end of May, it failed to block a user from Pakistani @pak_fauj who changed the Twitter name to impersonate as Omani Royalty Mona bint Fahd al Said and posted anti-India tweets in April. The tweet was shared by many including in the Gulf region, as also by Pakistani media.

Social media experts point out that Twitter must have missed it as the account had "parody" mentioned in its bio and the company doesn't block parody accounts. Interestingly, this was not the lone case. According to reports, Indian security agencies have identified nearly 7,000 accounts on the micro-blogging site that were opened in April 2020 and are being operated from Pakistan. These social media handles, the report said, had launched a major campaign against India with the aim of influencing the country's relations with the Gulf countries.

In early January this year, Innefu Labs that works closely with government and enforcement agencies including the Defense Research and Development Organisation (DRDO), reported 1,079 Twitter accounts were created in Pakistan to spread hate speech around Citizenship Amendment Act (CAA).

Pointing out the role played by Twitter in promoting anti-India Goenka highlighted that the trigger for his PIL was the tweet by Gurpatwant Singh Pannun, a legal advisor of Sikhs for Justice (SFJ), a separatist organization that has been banned by India's Ministry of Home Affairs. SFJ is also reported to have links with Pakistan's intelligence agency ISI.

Known for his hate campaign against India, Pannun had recently posted a video message threatening Punjab Police for the state government's steps against the so-called Referendum 2020 that it termed as a pro-Khalistani movement. Earlier, SFJ had announced that it would hold "Kartarpur Sahib Convention - 2019" in Pakistan for anti-

India propaganda in November 2019 during the 550th birth anniversary celebrations of Guru Nanak Dev.

While Twitter eventually, suspended Pannun's account in June, it was not before Goenka met the company's representative in India Shagufta Kamran, made representations to different authorities including the Information and Broadcasting Ministry, and the Home Ministry. The account was finally suspended after a formal complaint was made by the Government of India.

Goenka, in his petition, alleges that Pannun's tweet was retweeted by many other Twitter handles and promoted by the company in the form of advertisements and created anti-India sentiments. It further points out that the said contents amount to waging a war against the Union of India and against the spirit of the sovereignty and integrity of the country not only by the handle but also the platform and it's representative because they did not take any action despite repeated information and requests.

"The platform collected advertisement fees and promoted the tweet for wider reach amongst audiences across the world, thereby helping the proclaimed offender and the banned organization to garner anti-India sentiments across the world," Goenka said, adding that since Twitter had a business deal in terms of promoting the tweet, the onus was on the company to do its due diligence and it cannot hide behind the "intermediary curtain".

"Separatists are using Twitter to make calls for breaking India and the platform has abated the act by accepting financial ratification and paid advertisement. And this is not the only instance. The platform is being used by the likes of ISIS, Al Qaeda, and Indian Mujahideen to circulate hate speeches and instigate anti-India actions," he said.

"How is it possible that the company which talks about algorithms cannot detect and alert Indian authorities about the related accounts? Since they are deliberately not taking any action and also promoting these, it is clear that Twitter is abetting terrorist activities," Goenka stated.

The legal view

The US and the India incidents might be different in nature, but they show the dual face of Twitter and its one-upmanship. It also highlights that the company has different parameters and uses them to suit its business needs. While it decided to censor a democratically elected President in the case of the US, it decided to promote tweets of a proclaimed offender and banned organization because it suited its business money.

As is well documented and known, social media platforms like Twitter makes almost all of its money by selling advertisements – promoted posts or promoted stories – as they are called. These posts and tweets show up in users' feeds or walls.

"The entire issue pertains to intermediary liability. Actually intermediaries are seen in a different light in different parts of the world. India has the concept of an intermediary under the Information Technology Act, while the American law has got the perspective of a service provider," Supreme Court of India Advocate and cyber law expert Dr. Pavan Duggal said.

"The American law is based on Section 230 of the Communications Decency Act, which in a nutshell says that if you are a mere network service provider, you will not be held liable for any third-party data information that may be provided through the pipe, so there will be no liability for what's happening on the platform."

He further pointed out that in comparison India has got a more nuanced approach and the concept of intermediaries is covered under Section 79 of the Indian Information Technology Act that says, intermediaries are by and large not liable for any third-party data or information made available by them.

This is, however, applicable only if four major conditions are met. One, the intermediary should comply with the Indian cyber law. Two, they exercise due diligence while discharging their obligations under the law. Three, they do not abet or conspire in the commission of any offense. And, last but not the least, once they are called upon to remove or disable access to an incriminating or illegal content, they do it expeditiously.

So did Twitter pass the four-point litmus test in the Pannun case?

According to senior advocate Ashwani Kumar Dubey who filed the petition on behalf of Goenka, social media platforms like Twitter often shirk their responsibilities by presenting themselves as intermediaries and refusing to interfere with the content flowing through them citing freedom of speech.

Most of the countries have one fundamental grouse that these service provider and social media companies are not located within their territorial boundaries.

"This happens because there is no law to deal with offensive and hatred messages, and platforms like Twitter knowingly promote the messages which are against the law of the land. Since the current rules are not adequate in checking content that is seditious, the petition seeks a directive that the Government of India should create a mechanism that can prohibit social media platforms from publishing such contents."

A quick comparison with changes that the Executive Order proposes indicates that President Trump also wants a similar mechanism. By suggesting changes in the applicability of Section 230, the President of the US wants to make sure that once intermediary exercises the editorial control, including promoting the content for whatsoever consideration, their statutory exemption from liability would not be applicable.

"While a lot of experts have dismissed Trump's Executive Order and it has already been challenged in the court, it is potentially going to have a catalyst effect at a global level. This is more so from the perspective of cyberlaw jurisprudence developments," Duggal said, adding that the order will compel many countries to have a relook at their national laws on intermediary liability.

"Most of the countries have one fundamental grouse that these service provider and social media companies are not located within their territorial boundaries. Often, it is a tall order to get these companies to comply with the national cyber law frameworks," he said.

According to experts, in the Indian context, Trump's order is expected to further strengthen the push towards amending the IT Act and compel the government to review the entire issue of intermediary liability under the Section 79.

"It is important that we revisit and review the Supreme Court judgement in the case of a Shreya Singhal versus Union of India primarily because the timeframe of 2015 was completely different from the existing ground realities during COVID-19 in June 2020."

It may be recalled that the apex court's landmark judgement in 2015, while upholding the constitutional validity of Section 79 of the IT Act and the rules had actually observed that service providers may get inundated everyday with requests for removal of data, and hence specifically directed that these service providers and data intermediaries shall not do anything till such time that they either get a court order or an order from a governmental agency.

"Most of the service providers tend to go behind the garb of the judgement and say, look, the Supreme Court asked us to wait for a court order or a governmental agency order and hence, despite the mayhem or contraventions happening on our network, we can do nothing to remove the data," Duggal explained.

Experts believe that the time has come for India to come up with stronger laws and legal provisions on intermediary liability. There is also a need for enacting stringent regulations and provisions in the form of amendments to the IT Act to prescribe specific proactive duties of due diligence. There should also be potential exposure to legal consequences for intermediaries in cases that do not comply collectively with the provisions of the law.

Interestingly, and importantly, Goenka and Dubey are also pushing to make KYC mandatory for all social media handles in the country. "This will make social media safe and accountable and traceable," Goenka said, adding that it will also help do away with fake handles.

There is also a need for a law to enable vetting of the logic and algorithms used by Twitter by the agencies so that the government is aware of the screening mechanism used by the company.

It's time to shift the onus and make social media platforms more responsible.

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[COMMENTARY]
SOCIAL MEDIA

Between the devil and the deep blue sea

Like all businesses, social media platforms must also ensure they transparently follow a universal code of acceptable human conduct

BY JAY VIKRAM BAKSHI

The devil mentioned in US President Donald Trump's executive order on preventing online censorship clearly is the advertising and trending algorithm which is now being targeted by powers inimical to democratic systems. They have also amplified China's propaganda abroad, including by allowing Chinese government officials to use their platforms to spread misinformation regarding the origins of the COVID-19 pandemic, and to undermine pro-democracy protests in Hong Kong. The order expands on examples without naming companies.

> As nations realize the worth of their citizen's data, more scrutiny into what is being published, by whom, and for what effect, will be asked.

The Deep blue sea is Section 230, almost like Section 66, of the Indian IT Act, which holds people responsible for the content they share on online platforms. India's first debate around rights of aggregation platforms vs. content creators was cast in 2004 around the arrest and jail term for the CEO of an online auction platform for allowing upload and possible sale of pornography on his website. But the jury is still out!

So what does this mean?

Since Cambridge Analytica, blew open the role small campaign firms have played in influencing election results on social media and EU's GDPR guidelines adoption, the days of using silent monitoring of users browsing habits via cookies for marketing purposes and otherwise are now permission based.

On the other hand, with countries like Germany enacting their own Network Enforcement Act (NetzDG) to enable and enforce the rights of citizens to monitor and remove offensive content, opaque algorithms embedded by social media companies for promoting and hiding content for profit or bias are facing increasing scrutiny and censure.

On the back of COVID-19, and vicious political attacks on social media either amped or hidden in pre-election periods, currently on in the US, and visible in India pre-Delhi elections, the question on responsibilities of these online platforms are now at the center stage.

A quote from the executive order is telling: "When large, powerful social media companies censor opinions with which they disagree, they exercise a dangerous power. They cease functioning as passive bulletin boards, and ought to be viewed and treated as content creators."

The urgency, in the US, as in India, comes from the clear pro-authoritarian regime leanings of these platforms, possibly hoping to score an entry into China, the one country that has banned them from its population, ab initio.

China, on the other hand, has allowed and enabled its tech sector to acquire global presence with a caveat coming in force with its 2017 National Intelligence Law. Article 14 of the law mandates that Chinese intelligence agencies "may ask relevant institutions, organizations and citizens to provide necessary support, assistance and cooperation." That this has had a signaling effect on global telco's and governments for slow pedaling orders to prominent Chinese 5G hardware makers is no accident.

In India, a spoof on China and Coronavirus was pulled off by TikTok, a Chinese promoted video social media platform, on the verge of censure after videos sharing content exhorting youngsters to commit gang rape was discovered on it. Twitter, on the other hand, pulled down a popular butter brand for sharing a spoof cartoon on "made in India" which lampooned Chinese imports.

Authoritarians, whether they are censoring content or running countries, usually cannot take a joke!

This is simply a chain of events unfolding on a path of community and global responsibility. No longer will "Opaque Algorithms" and IPRs around them be accepted, as data localization becomes the norm around the world. As nations realize the worth of their citizen's data, more scrutiny into what is being published, by whom, and for what effect, will be asked.

Certainly, global platforms which owe no explanation to anyone but their own engineers and funders will be under constant scrutiny, as they will try to hold close what they have promoted or censored for what purpose.

Social Media is at the end of the day, a public square, and all platforms must make sure they transparently follow a universal code of acceptable human conduct, even if business gains are compromised.

The author is a digital evangelist and founder of Digiqom, a digital media strategy consultancy

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Marriages on the card for Indian telcos

With India's digital space becoming competitive by the day, telcos are emerging as exciting options for global investors, and RJio is not the only one attracting suitors

BY THOMAS GEORGE

The Indian Telecom space has a lot of pink noise bubbling underneath the mundane humdrum of quarterly report cards, subscriber base slices, and spectrum battles. Players that are sharp enough to sniff the future direction are packing their arsenals well for the explosive opportunities that can erupt very soon enough.

Interestingly, every player has some distinct strategic ammunition up its sleeve to garner new-age advantages. They are not shy of shelving what is out of context now, neither are they hesitant in making a pole vault to completely new terrains.

Let's start with the impact that an unexpected horse from another stable – Amazon – can make for the existing cowboys.

Some cartwheels

The American multinational, Amazon, has been looking

> The boundaries of industry caste and race are getting blurred as players look at embracing friends from unconventional corners, as long as they take some data vows together.

at the Indian market with keen interest. Its interest gravitates towards the company's consumer-centric businesses and has deepened in the last few years. This could be an upshot of the pace and at penetration at which as this giant has, steadily, established a good foothold in the online market space.

Notably enough, it picked close to a 5% stake in Indian apparel and household product retailer Shoppers Stop in 2017. Thereafter, in 2018 again, it picked some stake in the grocery chain. However, the effort to invest in Future Retails did not come off and today it has RJio to contend with – a player that boasts of a string of funding flowing in from various investors including Facebook, and with some hard-to-miss e-commerce initiatives like JioMart.

That makes it important for Amazon to have a strategic partner like Bharti Airtel with a large subscriber base. These handshakes will bolster its plans with a captive subscriber base spread out across the country. This will also help Amazon get its foot in the door of a big room that is teeming with potential customers who are upwardly mobile. These are ripe segments that could be looking at various consumer services that Amazon can provide through its bundles around Prime video, music, reading, and e-commerce.

Some flips

Speaking of performance, let's move our lenses to another A-list company. Bharti has ticked most of the boxes by now, and quite impressively. It's Q4, FY20 consolidated revenue and India mobility revenue jumped 8.2% and 16% QoQ and took industry analysts by surprise. This jump was primarily driven by an uptick of 14.3% in ARPU to Rs 154.

The QoQ volume growth was also stronger with 16.3% for data and 8.3% for voice. We witnessed Bharti accelerating its capex in the last quarter to keep up its competitive play. A strategic Investment from any big investor will help Bharti increase its capex outlay in the next couple of years.

This could be a good chance to explore beyond its connectivity services. For instance, it can help Airtel to take the entire spectrum of Amazon Web Services (AWS) offering across its depth and breadth to its enterprise and commercial customers.

This will not only arm it well in ramping up its capacity to capitalize on the revenue market share, but will also help it to gain opportunities over its competition including the future 5G auction.

Some moonwalks

The future is going to be about strategic marriages of all stripes. The boundaries of industry caste and race are getting blurred as players look at embracing friends from even unconventional corners, as long as they take some data vows together.

It is not hard now to connect the dots between the Indian digital services providers and the ecosystem that is popularly known as FAANG – Facebook, Amazon, Apple, Netflix, and Google (Alphabet). Google is in talks with Vodafone Idea to ink new strategic investments. The staggering growth that is spotted in their similar businesses DNAs also unravels the fact that how well they are thriving on the confluence of connectivity, social platforms, and cloud storage – all fueling the explosion of the data. These data and user insights could offer some much-needed future digital marketing opportunities for its stakeholders.

It's time to witness a new playground for the leading Indian telecoms service providers – they are all set to attract the attention of some of the world's leading platform players and investors.

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Rise of the mobile ecosystem

The mobile is already an extension of one's personality and COVID-driven new normal has taken mobile apps to the next level. Here is what to expect in the post-pandemic world

BY SUNIL RAJGURU

In the 1980s, the desktop exceeded mainframe sales and later the laptop co-existed with the desktop. However, if there's one device that could theoretically put every other device out of business, then it's the smartphone. As long as you have all the apps, all the bandwidth, and the cloud, then you don't really need anything else. The mobile can really be the one device that can replace all other devices.

Imagine a world with just screens, input devices, and your personal smartphone which has all the power you need, and you could take it where you want and use that power anywhere. However, we are getting a bit ahead of ourselves. The COVID-19 pandemic and subsequent lockdown have already changed our way of life and the way we use technology. Certain long-trend terms of the pre-COVID world are getting cemented and new ones are being created.

- **Mobile workforce will increase:** Sometime back the mobile workforce crossed one billion and the way it's going, the two billion mark could come sooner than you think, thanks to the recent tech acceleration. More and more tasks can be done on the mobile and it is being made secure from the company's point of view.

While it started with official mail and then became indispensable for agents and courier-delivery boys, that's just the beginning and soon almost every profession will be able to complete many of their tasks

> While desktop and laptop did not really reach the bottom of the pyramid and rural masses, the smartphone did. Powered by mobiles, rural India will be the next big growth story.

on the mobile. It is important to note is that while desktop and laptop did not really reach the bottom of the pyramid and rural masses, the smartphone did. Rural India is the next big growth story.

- **Mobile apps will mushroom:** The Coronavirus crisis is a strange thing. While some industries are in a recession, others are seeing a boom. One such sector is the mobile app industry which is seeing more downloads, and more app makers are scrambling to meet the need of all those jumping on to the bandwagon.

  If anything can be done on the desktop or laptop, it will be done on the smartphone. That includes both work apps and those for leisure like gaming. Artificial Intelligence is also being leveraged big time in the apps that are on their way.

- **Contact tracing gets a foot in the door:** Everyone knew that mobile devices could be used to track people and governments were trying to leverage that to their advantage, but there were too many privacy concerns. However, it takes just a good crisis to get that foot in the door. Contact tracing is the latest and now private citizens will finally be tracked. Israel mastered this and used mobile GPS information of critical patients to find out where they were and send alerts to those mobiles that were in proximity. Even in India, we have the Aarogya Setu App. Expect this to be used for more things in the future. Your mobile is now your new ID-card.

- **Collaboration will be popular on mobile too:** Zoom was launched in 2011 and only in 2020 it became such a rage. Soon other collaboration platforms followed. People realize that a lot of international, domestic, and local travel is not necessary. Videoconferencing and secure and seamless file sharing tools can solve a lot of problems. And what can be done on the desktop and laptop can eventually be done on the mobile. It's no wonder that WhatsApp upped the video call capacity from 4 to 8, cozy for most internal meetings.

- **Digital wallet and cryptocurrency:** In a no-touch world people are scared to exchange notes and coins. That can't happen with digital money. That got a fillip in India after the demonetization of 2016 and is now picking up globally after the pandemic. In the long run, people may also explore cryptocurrencies. Digital cash can empower the lesser privileged who may not have access to other channels but have mobiles.

- **5G/successor technology will be the kill shot:** 1G was calls. 2G was also SMSes. 3G was the internet. 4G supersized it all and we got the consumer internet revolution. 5G will not be limited to mobiles. It will power smart homes, smart cars, smart factories, and eventually smart cities: one upper estimate puts the number of Internet of Things (IoT) devices at 500 billion by 2030.

Image by Gerd Altmann from Pixabay

That ecosystem will be ruled by the mobile and we can only imagine what all that will encompass. The "Age of the Mobile" has already begun.

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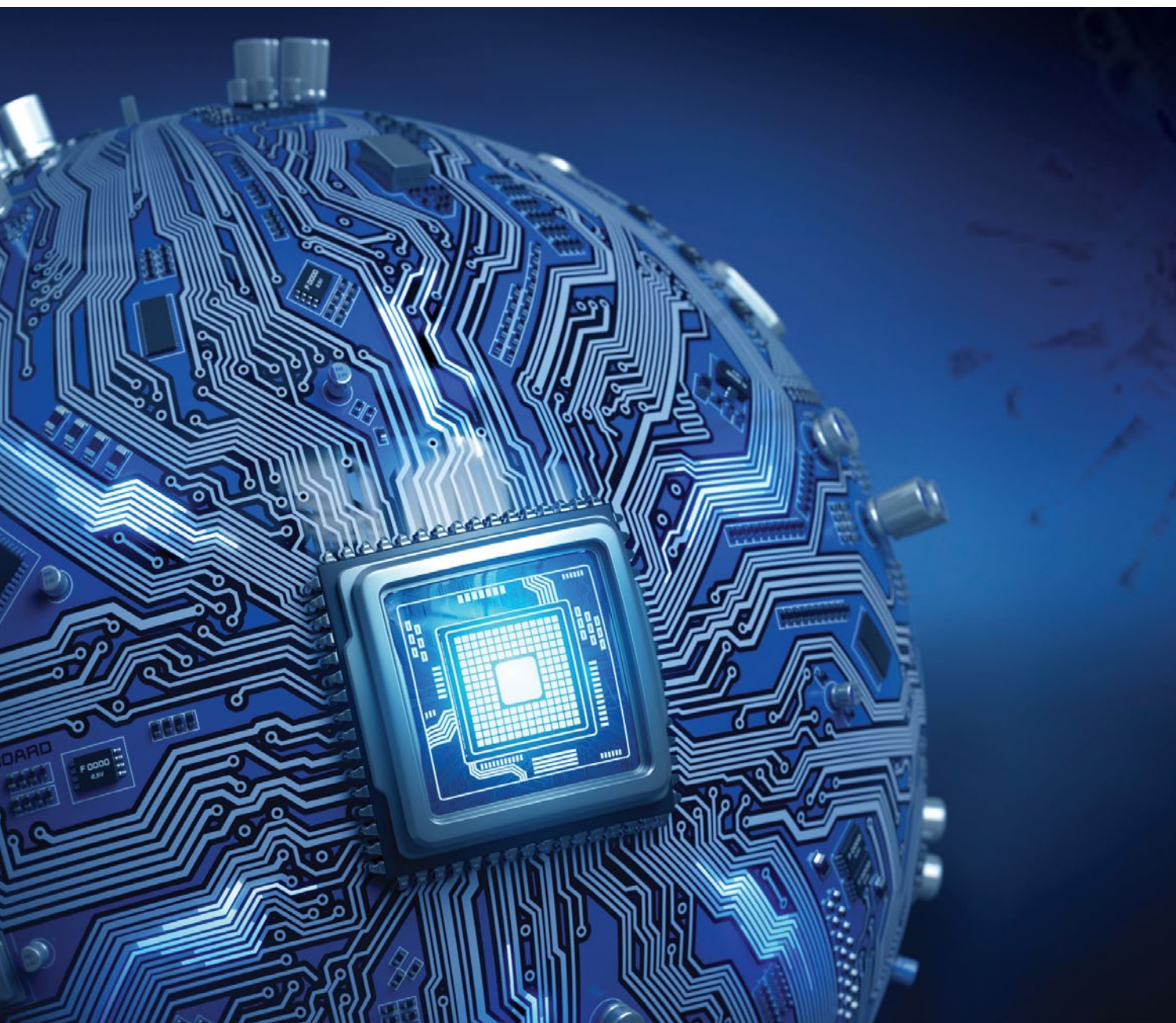
[REPORT]
SEMICONDUCTOR

Dusting the pandemic off

Adapting well and in time has been, and remains, the strongest hint of business survival. Is that what the semiconductor industry would be doing as it crawls out of the pandemic-hole?

BY PRATIMA HARIGUNANI



To lie low, to change the course, to shed dead skin, and to make new friends – Darwinian reflexes never go out of vogue. So, while we heard alarms about the future of the semiconductor industry, thanks to the direct blow to supply chains and fabrications, we might have missed the wind-chimes that were following close enough.

Yes, dents will happen given the force of this blow, but long-term species have a way of healing themselves and finding ways to go on. For this industry, this survival and adaptive dance would be two-pronged, as it appears now.

First, the demand would change tack. If electronics and upstream markets dry up, other pockets of growth would pop. Second, rock-stars in semiconductor materials might see new contenders emerging and gaining a good foothold. Wondering how? Let us break it down.

Same market, new appetite

Ok yes, the effect of the Corona outbreak is not something we can trivialize. If we look at Gartner's recent reckoning, the worldwide semiconductor revenue was already going backward to USD 419.1 billion in 2019, down 12% from 2018. It noted how oversupply in the DRAM market nudged the overall memory market down 32.7% in 2019, making it the worst-performing device segment; especially the NAND flash that dived 26.4%.

So things can't pick up immediately when weak demand from smartphone and hyper-scale cloud service providers affect fab plans and cut wafer starts to levels below 2018.

But while that happened the optoelectronics segment actually shot up by 6.6% in 2019. Even if consumer and enterprise spending goes sluggish due to the impact of Coronavirus, making the global semiconductor market decline 0.9% in 2020 instead of the forecasted growth of 12.5% at the end of 2019, as per Gartner, other springs could show a hard-to-miss spurt.

According to Jim Handy, semiconductor analyst with market research firm Objective Analysis, the semiconductor business will struggle with supply chain issues, but the bigger impact will stem from any demand lapse that happens. "We're not expecting the current price upturn to last much longer anyway, but the pandemic could cause prices to fall to cost sooner than we anticipated," he said.

Let us comb through another report. This one is on the Semiconductor and Circuit Manufacturing Market by Meticulous Research and it tells that the semiconductor and circuit manufacturing market could be growing at a CAGR of 16.9% from 2020 to 2027. This clip could help it touch USD 4.7 billion by 2027.

Now would all of this shine come from the usual suspects – computers, laptops, telecommunications equipment, storage devices, mobile phones, medical equipment, automotive or new areas like artificial intelligence (AI), internet of things (IoT), big data analytics, drone, robotics, and 5G? Well, that would be hard to say. But more baskets mean the eggs would survive somewhere.

The researchers here aver that the pandemic is posing a challenge to the industry and making it relook at its global supply chain model. They also hint that some high-risk segments, including consumer electronics and automotive would be a question mark, but then we would also have other segments – cloud-computing data centers, communication, and connectivity technology, and healthcare – that would need semiconductors for the new tipping points they are heading to.

As governments start to jump in on the rebound phase with tax breaks, incentives, and stimulus boosters, things will start to look up. And people will find ways to get back to lifestyles – old or new. Plus, the world will move to more automation, need more medical devices, and remote-work enablers. So semiconductors will find

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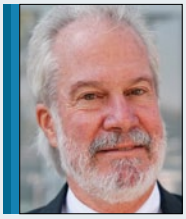

"Consumers may postpone cell phone upgrades, purchase of a new PC, television, or vehicle. Although semiconductors have done well so far this year, I expect that to end as consumer purchases slow down."

Jim Handy, Semiconductor Analyst, Objective Analysis

new homes, under new names. But they might live on, just fine.

That means the component hierarchy will see some shake-up. In 2019, the memory device segment made up the largest share but the optical device segment is something emerging as an area of rapid growth. Also, there is hope for more up-swing for the extrinsic semiconductor market due to energy sector needs.

Myson Robles-Bruce, a semiconductor analyst with global technology research firm Omdia, has been busy reading these tea leaves with his colleague Ron Ellwanger as they manage the firm's two flagship semiconductors market database tools. If you ask Robles-Bruce, he minces no words. "This year COVID-19 has had a negative impact upon the electronics and semiconductor industries in terms of both supply and demand," he said. But he is also quick to add that technology companies are definitely anticipating the inevitable opportunities that will present themselves "on the other side."

Before the close of Q1 2020, Omdia revised its 2020 semiconductors revenue forecast downward to minus five per cent (excluding memory ICs). Unlike every other semiconductor component category, memory IC is still expected to grow this year due to rising ASPs that are being driven upward by hyper-scale data centers demand.

According to Robles-Bruce, forecasts for 2021 may be significantly more positive and double-digit growth in semiconductors overall would not be shocking given a strong rebound in the markets. "Specifically, 5G smartphones are expected to be important growth factors along with automotive electronics and the continuing high rate of development in data centers. Once the current healthcare crisis has been effectively managed and put under control, expect the industry to become stronger in the longer-term due to increasing demand for more advanced electronics designs that will depend upon greater support from semiconductors content."

Handy points out that it is intriguing how COVID-19, which wasn't even identified until early January, has changed so many things in little more than three months. "Everyone wants to know what the rest of the year will look like. If you ask me, I don't know. But I can look back at other economic downturns and guess that COVID-19 will cause similar turmoil."

"I am not one of the analysts who see it as a demand-driver. I see it as a risk of another global financial collapse, perhaps even worse than the world experienced in 2008. Consumers may postpone cell phone upgrades, purchase of a new PC, television, or a vehicle. Although semiconductors have done well so far this year, I expect that to end as consumer purchases slow down," he stated.

When some analysts look at numbers from the street (like the first-quarter reports of Texas Instruments and STMicroelectronics), that's another assurance that the cobwebs are still far away from semicon factories. Management teams of these companies have also stated in their own different ways that despite challenges like low-order volumes or manufacturing and logistics operations, the second quarter will see a bounce-back. Investment in long-term strategies and inventories for anticipated future spikes in demand – these seemed to be common threads that passed through their statements about the future.

These leaders call it a speed bump, which would have a short-term effect but will not distort the long-term value picture.

Parag Naik, Co-founder and CEO of Saankhya Labs agrees that the COVID-19 pandemic has disturbed the supply chain of the semiconductor industry but new

"The semiconductor industry outlook for the remainder of this year is dependent upon global economics. Most forecasts assume widespread recovery by Q4 at the latest, which might not actually occur."

Myson Robles-Bruce, Semiconductor Analyst, Omdia

pockets of demand are also popping their heads. "We were doing some system design in China and that is now delayed. So far we have not seen a direct 'surge' in demand. However, we have been getting some queries from US players to make some new chips and systems. As of now, there is no concrete proposal but some interest has been generated. Despite the increasing uncertainty among businesses, technology suppliers should continue to maintain constant engagement with business partners and prospects, focus on long-term investments and explore specific markets for stability."

And then there is the next kid on the way.

New markets, new avatars

Interesting! We are heading to a world where Diamond and Tin could be turning into the new Gold – not only shrinking costs or time but also expanding applications and new markets.

The silicon material segment had the largest share of the overall semiconductor and circuit manufacturing market in 2019. A lot of it has to do with its applications that straddle industries such as communication, aerospace, and electronics. But innovations are queuing up fast and furiously. Now there is diamond and tin oxide that make it possible to imagine new intestines other than silicon in the products and application of the future.

AKHAN Semiconductor has innovated with diamonds as wide band-gap semiconductors (WBG) and is now even utilizing the Miraj Diamond Platform for fast-tracking development of COVID testing devices. It has also been exploring applications that use bio-sending field-effect transistors or Bio-FETs. The diamond breakthrough handles high temperatures much more readily and also gives longevity as an advantage, as per the company. Diamond components can also withstand repeated treatment with harsh chemicals.

That's not it. High-mobility is what engineers always wished for uses in LED lights, photovoltaic solar panels, and touch-sensitive display areas. Plus, it was tough for transparency and conductivity to coexist in a material. Enter thin and transparent tin dioxide semiconductors. Researchers at the University of Tokyo have created a tin oxide thin film that makes tin dioxide semiconductors equipped with high mobility and useful functionality.

The other side

With all this happening, it is interesting to see that the industry is already reconfiguring itself for new possibilities. Naik suggests that emerging innovative technologies including 5G broadcast, satellite communications, intelligent edge, and IoT will be extremely crucial for an overall recovery to the technology sector in the country.

"The semiconductors industry outlook for the remainder of this year is highly dependent upon global economics. Most economic forecasts for this year assume widespread recovery by Q4 at the latest, which might not actually occur," Robles-Bruce said, adding the economic angle.

While it may be difficult to say how the next few quarters will pan out, but the years would not be all grey if we look beyond immediate numbers.

Maybe we are right. Maybe we are just in the Pollyanna mood. But that vibe is why we have names like DuPont and Nokia etched in the business Bibles. Corona may not be a deadly ice-berg for this industry but may prove to be just a storm that puts it on a new course. Till then, all hands off the deck.

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Igor Maurell
Head of Network Operations, South East Asia, Oceania and India, Ericsson

"Indian telcos need to address ever increasing levels of data traffic"

Communication service providers around the world recognize the need for immediate action on AI and automaton in their operations. Ericsson South East Asia, Oceania and India Head of Network Operations ***Igor Maurell*** *speaks with* ***Pradeep Chakraborty*** *on automation in the telecom sector, network complexities and the role AI can play in streamlining telcos' operations. Excerpts:*

Pradeep Chakraborty (PC): Why is automation important for Indian operators?

Igor Maurell (IM): With the advent of 5G and the surge in mobile data traffic, networks are becoming more complex.To handle current requirements and be future ready, telecom operatorsneed to be prepared to manage the network complexities while ensuringefficiency from cost, network and operations standpoint.

To mitigate these complexitiesoperators are looking to automate their network architecture. To this effect, we are seeing an increased adoption of technologies such as artificial intelligence and machine learning towards automating network operations and its management. With automation, not only can the operators be better prepared to manage complexities in the network – It will also help them in providing better customer experiences, thereby strengthening their revenue streams.

PC: What are the major complexities in Indian telecom networks, and how are operators addressing them?

IM: Ever increasing levels of data traffic is a challenge that telecom operators need to handle. In fact, Ericsson Mobility Report predicts that data traffic will reach up to 22EB/month in 2025 from 6.9EB/month in 2019. Apart from data traffic, network down time, energy consumption and inter-frequency issues are some of the other challenges that the operators face. In order to transform these challenges into opportunities, operators are increasingly adopting technologies such as AI and ML in order to better manage their network operations.

Today, we are seeing some level of AI already being incorporated into networks. We are addressing AI-driven automation operational demands through network intelligence, which combines three pillars – data, analytics and insights – to tackle the increasing complexities of

> We are addressing AI-driven automation operational demands through network intelligence, which combines three pillars – data, analytics and insights.

modern networks and prepares service providers for 5G. Network Intelligence brings simplicity to network complexity through advanced, data-driven analytics that give fresh, unlocked insights and helps service providers understand network data, as well as predict and preempt faults instead of reactively troubleshooting them.

Ericsson's depth of end-to-end domain product experience, comprehensive data-driven solutions and culture of global knowledge-sharing, reinforced by a broad information library, uniquely positions us to support service providers to make an effective transition to data-driven operations. This is augmented by speed, which is essential in capturing and acting upon insights.

PC: How open are the operators in adopting AI-based automation?

IM: Apart from creating efficiencies in order to achieve higher revenues, providing an enhanced customer experience is high on the agenda of the service providers. Communication service providers around the world recognize the need for immediate action on AI and automaton in their operations to boost cost-efficient customer experiences as the 5G-driven Internet of Things (IoT) and Industry 4.0 gathers pace. Infact, according to an AI & Automation report by Ericsson, 90% of operators state that AI is important in boosting customer experience.

PC: How much reduction in operational efficiencies can operators expect through automation?

IM: From a capex perspective, with automation, operators can reduce operational costs significantly and introduce services more quickly. In fact, as per our reports 70% of operators believe the highest potential return from AI adoption will be in their network planning, whilst 64% intend to focus their AI efforts on network performance management.

In addition to this, with automation we can see an improved speed of fault detection and resolution, leading to improved network performance.Here, automation creates significant efficiencies and frees up our engineers from having to undertake repetitive manual tasks, allowing them to focus on providing more value-added services.

PC: How is Ericsson helping operators in maintaining quality of service?

IM: The Ericsson Operations Engine directly addresses operator's network complexity challenges using AI, automation and data insights.It addresses targeted business outcomes for operators such as enhanced customer experience, revenue growth and efficiency. Ericsson recently launched two new AI powered offerings in its Network Services portfolio. They employ AI, automation and predictive analytics to address the complex reality faced by operators such as exponential data growth and introduction of new technologies.

PC: How can you ensure security in an AI-enabled autonomous network?

IM: Security is top priority for us as next-generation networks will carry an abundance of industry and consumer data. Using AI and automation is a positive from a security perspective. Ericsson's evolved network security is the pioneer of a simpler yet more robust era of telecom security. Our market-leading solutions equip operators with autonomous, end-to-end telecom security – built in each layer of the network and securing all connected things everywhere. The Ericsson Operations Engine built-in data, user and network security will be fully compliant with global standards and regional regulations.

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Getting ready for a trillion-dollar economy

Communication service is key to unlocking the potential of the digital economy. Are the service providers ready with the technology and platform needed to achieve this?

BY DR. RAGHU RANGANATHAN

India's digital economy is on an incredible growth path. As businesses work toward realizing Digital India initiatives, we will see digital applications and tools penetrate every aspect of daily life, transforming business and empowering citizens to realize their full potential. According to a Ministry of Electronics and Information Technology (MeitY) report, the Indian digital economy has the potential to reach USD 1 trillion by the year 2025, driven in part by a mobile-first society with the growing proliferation of smartphones, affordable data tariffs, and mobile broadband.

The cornerstone of this predicted growth is increased digital adoption. For example, as mentioned in the MeitY

> CSPs will need to plan for a very rich interconnection of edge cloud locations and user-to-edge in order to deliver the applications and performance the digital consumers expect.

report, India's monthly mobile data consumption per user is now more than 54 times of what it was in 2016, while the monthly fixed-line data consumption more than doubled between 2014 and 2018.

It's no secret that the daily lives of Indians revolve around the mobile phone – for both professional and personal needs. Whether it is WhatsApp, YouTube, Hotstar, popular gaming apps, e-governance services or otherwise today's consumers are increasingly sophisticated in choosing what content to consume and how. Digital India was implemented to accelerate the rapid shift toward digital services and enable all sectors to increase productivity, save time, reduce costs, and deliver stronger business outcomes. This national plan mandates that businesses and organizations deliver digital services with a 'cloud by default' approach. Considering the recent shift toward remote working, the cloud-first strategy is accelerating digital transformation at both public and private enterprises. It is also enabling organizations to better meet the needs of digital consumers.

Communication Service Providers (CSPs) are the key to unlocking a digital economy and delivering forward-looking and exciting end-user experiences across a variety of verticals such as education, agriculture, transportation, and more. It is also important to drive the cloud-first and mobile-first approach that can deliver digital services at scale. So, are the CSPs ready for the trillion-dollar digital economy?

Getting ready for trillion-dollar scale

Ushering in the trillion-dollar digital economy – especially with 5G imminent in India – requires the underlying network infrastructure. To offer the latest digital use cases in a mobile-first market that is increasingly relying on the cloud, networks need faster speeds, higher service availability, and lower latency. As we're on the cusp of smart cities, Industry 4.0, and many other life-changing innovations, higher speed fixed and mobile broadband technologies are critical to delivering seamless experiences in this next era of innovation.

The Government of India's 5G High-Level Forum's steering committee report estimates that the cumulative economic impact of 5G on India could reach USD 1 trillion 2035. With 5G, the CSPs can deliver even more seamless experiences with high-definition video, augmented reality, virtual reality, and the internet of things. The transition to 5G would be critical to delivering digital services at scale more cost-effectively. Whilst awaiting 5G auctions, CSPs are also actively working to upgrade their mobile 4G/LTE and fixed networks with advanced features to meet current growth.

A Research and Markets report projects that with 5G, data consumption can be 3x-10x that of today's 4G/LTE network. Preparing networks for 5G is more than a radio upgrade. Consumers are demanding more dynamic and immersive digital experiences, and so the edge cloud data centres will play a critical role in enabling the digital economy.

Lower latency requires content to live closer to the edge – or in other words, closer to the end-user. Rather than data being generated and processed in data centres that could be far away from the end-user, edge computing enables data to be stored and analyzed locally ultimately ensuring faster and better content delivery. Take manufacturing for example. Industrial equipment equipped with sensors can process data close to the equipment, e.g., network edge and/or industry campus, rather than travelling back to a data centre.

Additionally, as cloud-based gaming like The Gaming Project, becomes more prevalent in India, consumers will need increased levels of broadband performance from their current CSPs. Another example is education – as students are using more cloud-based interactive technology at home and in the classroom such as group video conferencing and augmented reality, CSPs will need to ensure these services can be delivered consistently high performance and on-demand.

5G networks will also need a lot of help from wireline networks and IT technologies to deliver on its noteworthy promises. CSPs will need to plan for a very rich interconnection of edge cloud locations and user-to-edge in order to deliver the applications and achieve performance the digital consumers expect. Furthermore, as Research and Markets observed, the transition towards 5G means CSPs are looking for simpler operations and shorter time to market for new functionalities. A connected platform with an open Application Programming Interfaces (APIs) can enable a vibrant business ecosystem of Digital Service Providers for the digital economy.

A platform for the digital economy

IP networks for access and metro access, e.g. for a user to edge content, are loaded with many legacy protocols and are not designed to offer the simplicity, scalability and cloud-first operations required for India's digital economy.

Moving from 4G to 5G requires CSPs to expand IP capabilities to the network edge. New digital services can also require increased IP functionality closer to the network edge and thus add to overall network operations complexity. Additionally, as the volume of network traffic increases between edge data centres and to end-users, traditional architectures and operations will not support the level of automation demanded by a very dynamic networking environment.

Simply put, networks need to evolve. Networks should be agile, flexible, and programmable. This evolution is not about adding more protocols or upgrading IP network boxes. It is about how to transform a network to efficiently connect users to content, and the speed at which the network can adapt to new application requirements. It is about flexibility, cost-efficiency, and performance – a network with capabilities that are adaptive. A lean, flexible, and scalable infrastructure will significantly reduce costs and eliminate inefficiencies.

India's IP networks must be designed with open platforms to scale clients and resources on-demand – they should be cloud-like and fluid in topology and architecture. To reduce costs and operational complexity, network functions will need to be disaggregated and virtualized in a way that allows network functions to be reconfigured rapidly – without physical intervention – and operate with a software-defined approach. The IP network must use a leaner IP protocol stack with a centralized routing and traffic

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engineering mechanism. IP platforms must also provide rich telemetry, which will allow for intelligent, data-driven, and intent-based automation.

Automate for service efficiency

Automation will play a crucial role in allowing CSPs to manage new complexities and deliver the next generation of services. Automation with open API transforms network operations and allows CSPs to become agile and proactive. It also helps CSPs reduce manual errors as well as operational and capital expenditures while avoiding vendor lock-in. Additionally, when operating as self-optimizing network infrastructure, the network can deliver the designed service intent for the digital services with minimal operational cost.

Dynamic planning capability provides a clear view of the network and service resources, which is critical for CSPs to predict, scale, and adapt to meet the ever-changing subscriber needs. Zero-touch network slicing allows CSPs to automate the life cycle management of end-to-end design, creation, modification, and monitoring. This tool enables the reallocation of unutilized resources to slices that need them, ultimately delivering more seamless and higher quality user experiences.

Leverage analytics and intelligence

Gaining deep insight about the network requires the capacity to collect and process telemetry information in real-time using machine learning models. Artificial intelligence and machine learning-based capabilities use the information provided by applications and telemetry, allowing the network to continually self-diagnose, self-optimize, and self-heal.

An open architecture and a flexible framework for collecting, processing, and storing network data can facilitate innovative analytics-based applications. Real-time visibility enables CSPs to understand how routing behavior affects service delivery, precisely how specific traffic traverses the IP network, and where performance can be optimized on an ongoing basis.

Suboptimal conditions missed by traditional tools can be identified quickly to correct service delivery issues and use network resources more cost-effectively to reduce overall operating costs. Powerful analytics and automation capabilities accelerate the transition toward an IP network that can support evolving digital services.

Gain a real-time view of network resources

Most CSPs have multiple inventory systems in place to support their various service offerings and lines of business. However, because traditional inventory systems operate offline and were developed primarily to support circuit-based physical networks, they provide a very static and fragmented view of service and network resources.

With CSPs under increasing pressure to reduce costs and launch more software-centric on-demand services to meet customers' expectations, they need new inventory solutions that provide a real-time view of network resources.

With new use cases constantly presenting themselves, an innovative architecture that addresses these new future applications requirements are compulsory today. CSPs need to move towards open, lean and automated IP networks to provide newer and ground-breaking services to their customers.

By using software automation, analytics and intelligence, and real-time views into inventory, CSPs can maximize on their network investments and deliver even better experiences to end-users. Now is the time to prepare for India's next chapter of growth and realize a trillion-dollar digital economy.

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How fast, furious, and fictile?

Amidst a slew of controversies and projections, 5G also stares at a new pocket of applications that could shape its real inflection point. Is this pocket well-lined?

BY PRATIMA HARIGUNANI

From 0 to 100 in five seconds! That's the true swag of any new sports-car beast. No matter how many new pistons it houses or whether it is V8 or V12; when you are taking the silk covers off its hood, the line that cracks its machismo is always about 'how fast it roars up'.

So, it is not so hard to understand why despite all the other breakthrough increments that 5G is promising above 3G and 4G, the aspect of low-latency is its biggest brochure-line. While it does promise a lightning-fast speed in comparison to other wireless technologies, its ability to offer true low latency and network slicing is its distinctive feather.

But wait. Are the highways ready for accommodating this blink-an-eye response time of 5G? Do we have the problems or applications all set for this supersonic racer? Of course, the use-cases can be endless – don't remote surgeons, driverless cars, robotic bomb squads, TSN (Time Sensitive Networking) manufacturers, IoT blankets, untethered factory robots, distributed cloud/edge apps, live VR Soccer players and remote office workers need the end-to-end low latency that they always dreamt of? Why lose a game over signals that were not so real-time –after all its 2020.

That's what makes 5G a creed apart. Once any technology shrinks the gap time or transmission time for a packet of data, the response time - between getting a signal at a cellular tower and the desired action- is, staggeringly, shaved off. Cutting off the delay in many latency-critical applications can almost turn into a lifeline for them.

Looks like the low-latency dimension of 5G can be quite a game-changer.

Make the switch

First, let us get past the hype over 5G, which is palpable and understandable. It is slated to be a market of a new size and ripple-effects. Voice over Long-Term Evolution (VoLTE) – the foundation for services on 5G devices, is expected

"For something like driverless cars, tele-surgery, augmented reality, or edge computing, you need one or more of what 5G brings to the table."

Shahin Khan, Founding Partner & Analyst, OrionX

to see subscriptions of 5.9 billion by 2024. An Allied Market Research report reckons the global 5G technology market at USD 5.53 billion in 2020. It expects the market to skyrocket explosively to USD 667.90 billion, of which APAC would hold USD 329.09 billion, by 2026. The part about ultra-reliable and low-latency communication (URLLC) would be an interesting one to watch for here.

OrionX Founding Partner and Analyst Shahin Khan's perspectives into its real muscle strengths can help us nail why 5G sounds like a genie that so many industrial users and applications are waiting for. "With a very broad frequency range, a couple of standards, and variations in how it is implemented, actual 5G experience – will simply depend on many factors. We will have to take into account aspects like coverage, cost, speed, latency, density, precision, power requirements and reliability. But it holds great promise and will – in time – enable new industries."

According to him, for something like driverless cars, tele-surgery, augmented reality, or edge computing, you need one or more of what 5G brings to the table. For such apps, the 5G URLLC service has all the right words, he reasons.

It is not just latency that we should be talking about. The operative word is 'reliable'. ABI Research Director Dimitris Mavrakis underlines the novelty aspect as he explains that 5G is the first cellular generation and standard that provisions the capability to have low latency – but most importantly, reliable latency.

"For example, when an industrial manufacturer develops any equipment that needs very precise operation and movement, 5G can guarantee that remote control will not be interrupted over this wireless connection. All generations previous to 5G have been operating on a "best-effort" basis that has been good enough, but 5G guarantees low latency and reliability."

You can't change the speed of light, is what ExtremeLabs MD Tom Henderson would tell here without getting too excited or flattened. "What's happening in 5G is that there is an infrastructure upgrading process that adds backhaul capacity to distribution points. Nothing in 5G makes data go any faster, but the equipment upgrades and requisite increased capacity do indeed offer lucky upgrade-recipients faster speeds. Because capacity increases, contention for sustained-data rate applications like higher-resolution videos, and more viewers in the same area, means less congestion. It's an opportunity for mobile service providers to upgrade."

As Dan Bieler reflected upon in a Forrester report on 5G strategy, many use cases for connected devices and assets work perfectly fine with existing network technologies like LTe or even NB-IoT, Lora, and WiFi. But 5G deserves our special attention and will give rise to completely new concepts for connected assets and services based on lower latency and much higher bandwidth.

Mavrakis augurs that providers will likely use this as a key differentiator against other technologies like the WiFi and position it for new business models. There is also interest from several enterprise verticals, but it is still early

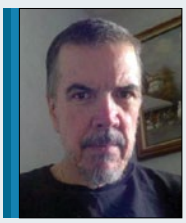
5G Vs. 4G/LTE Standard

Broadband speed	
Maximum data transmission rate per user across coverage area For 4G: 100 Mbit/s 10 to 15 Mbit/s For 5G: 20 Gbit/s 100 Mbit/s	
Latency	
Time to transmit a data packet from one node to another For 4G: 5 to 50 milliseconds For 5G: 1 to 5 milliseconds	

Source: The CIO's Guide to 5G Connectivity and Strategy, 2019; Forrester

"All generations previous to 5G have been operating on a "best-effort" basis that has been good enough, but 5G guarantees low latency and reliability."

Dimitris Mavrakis, Research Director, ABI



"Because capacity increases, contention for sustained-data rate applications like higher-resolution videos, and more viewers in the same area, means less congestion."

Tom Henderson, Managing Director, ExtremeLabs

days. Bear in mind that the official 5G standard that allows these features will be frozen in June 2020 (3GPP Release 16), so it's still early days."

Wait, how can we forget that part of the highway! Standards... Ahoy.

Making it all smooth and frictionless – how?

It is hard to dismiss the role of relevant, and timely, dusting-off areas like standards and interoperability. If we really want 5G to get where it, on paper, can reach, we need to take the bumps off the road. It is also important to have seamless and fluid ecosystem comfort for this roadster to travel without too many U-turns.

"Inch ahead" is probably the right word here, affirms Khan. "Some standards are there and others are being worked on. For example, for IoT applications, 5G's mMTC service new standards are being defined. The services may be not quite there as this area is related to packet size, frequency of communication, or distance."

Henderson reminds here why a lot is dependent on how phone makers and other consumer device makers implement 5G. "The very term 5G is somewhat ambiguous because it describes a wide variety of possible signal-delivery methods. Some of these methods won't ever be used in some regions because of spotty or non-existent implementations. Some areas, especially those with high population densities, may have many possible signal-delivery mechanisms available. This, then, presents a dilemma for device makers – implement as many signal transceivers as possible, or contain cost because no device will use them all? Will this be seamless for users?"

Talking of roads and cattle that may intercept 5G's dash, it is tempting to forget about other cars that drive along too. What's the point of being in a fast circuit when there is no company to wave a hello to? No technology can function in isolation, especially when the tarmac is headed towards spider-y flyovers.

As to the issue of interoperability, Mavrakis argues that 5G is a global consistent standard so any device should work with any network so from that perspective, there is seamlessness. "However, if you are asking whether network operators can mix and match components from different vendors, there is still a lot of work to be done there. In any case, one of the biggest advantages of cellular networks is that they are governed by a single standardization body (3GPP), meaning that interoperability is guaranteed between networks and devices."

For now, the technology is struggling to get past the gates of the garage, thanks, among other barriers, to the Huawei controversy and the COVID-correlation-rumors that have led to arson of some towers in some prominent parts of the world. Will it hit the kerb or the highway – is, suddenly, too soon to tell. Henderson quips: "Let's see how much capital will be invested in diverse signaling, and how fast other protocols like GSM, LTE-4G, and early 5G implementation-age move." He is right. Now that the wind-tests and wax are done away with – let's see.

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Transforming local communities

The high-speed, ultra-low latency technology will not just impact businesses, but transform lives by enabling more efficient and transformational government services

BY ALOK OHRIE

5G is witnessed as a revolutionizing technology in many parts of the globe and is yet to fully extend its presence in India. Over the next few years, 5G is projected to become the primary communications network within cities in many countries around the world, including India. It will enable communications 20 times faster than today's 4G connectivity, transforming mobile networks and helping local governments better support their constituents.

In fact, this technology will change the daily lives of communities and generate a wealth of opportunities for improvements in public safety, transportation, online government services, and more. For instance, private cab aggregators like Uber and Ola have inter-city services that make it necessary for cab drivers to stand in long queues to pay toll taxes whenever they travel from one city to another. Although there are monthly and long-term packages available for paying such taxes, the cab drivers are not sure about the frequency of their travel, hence they refrain from opting for such packages.

With 5G connectivity an application could be developed in the future which will be able to keep a track of the location of every vehicle and will automatically deduct the tax amount from the linked payment gateway. To bring in more transparency, tax collection accounts of different states could be linked to the application so that the due amount could automatically be transferred to the respective state bodies.

This would not only make operations easier for the cab drivers and aggregators but will also help in managing long-queues that are witnessed at toll plazas on a regular basis.

> In India, 5G will emerge as a game-changer for the economy and is expected to create an economic impact of more than USD 1 trillion by 2035.

So what does the "connected everything revolution" means for local government and IT leaders?

Getting started with 5G

The next-gen 5G network is not merely an evolution of 4G, it requires massive transformation. However, many local governments are not yet ready with an architecture that can support the increased volume of data that would be a case when 5G is deployed.

The increased volume of data would be in different formats and include video and audio content. Therefore, 5G advantages won't be realized by building proprietary, vertically integrated networks like those for 4G. A foundation for 5G data interactions will require a modern and flexible data infrastructure including virtualization, both hypervisors and containers, open networking, and storage.

Moreover, implementation of 5G connectivity across the nation does not solely rely in the setting up of advanced and compatible infrastructure. 5G revolution could be termed successful not only when citizens are able to make the best of it, but also when the workforce of businesses can cherish the benefits of this technology. They need to be skilled in more than just mobile networking and be organized to integrate DevOps to create new applications that can take advantage of high-speed mobile data. Shifting to 5G will require operational excellence to integrate domain knowledge, data science, and computer science skill sets.

Additionally, the foundational shift to 5G must also happen in conjunction with security transformation. Networking and security are evolving in tandem and 5G supports that evolution, integrating security natively into all services and processes, rather than as an overlay.

Going ahead, point products, such as firewalls and intrusion detection systems will give way to data-driven, automated security frameworks that leverage the underlying programmable infrastructure for visibility, detection and enforcement. Balancing the transformations for workforce, IT and security will put cities a step closer to realizing the full benefits of 5G and continue to improve constituent experience.

Digital equity with 5G

5G offers the ability to deploy high-speed connectivity in places where it may seem not possible today, thereby bridging the digital divide.

As cities install the 5G backbone, they should also consider how the technology can create a more equitable community. It is expected that by 2050, 66% of the world's population will be residing in urban areas. Hence, there would be increased demand for water resources, clean energy, transportation, healthcare, public safety, etc. This increased demand will be met by 5G evolution, by harnessing the power of the IoT devices to resolve the challenge with seamless connectivity.

In India, there are several cities like Pune and Jaipur that are already thinking about their transformation into digital cities and deployment of the 5G technology that will make this journey seamless. With the help of emerging technologies such as AI, IoT, and big data, cities would be able to derive and develop innovative solutions for local problems.

When it comes to 5G, what's important to remember is that, this transformation will not be an overnight or simple upgrade, but a gradual architectural evolution. In India, 5G will emerge as a game-changer for the economy and is expected to create an economic impact of more than USD 1 trillion by 2035. No doubt this journey will comes with its own set of challenges, but it brings opportunities that will set leading communities apart and pave a path to more efficient and transformational government services. From smart factories to cities to 'connected everything', 5G is the key element and the bedrock of innovation, which will transform the way we live and work.

The author Alok Ohrie is President and Managing Director of Dell Technologies India

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Making it real

The advent of 5G is likely to unleash a plethora of opportunities. Are we gearing up to realize its full economic, societal, and environmental benefits?

BY HUZEFA MOTIWALA

COVID-19 is an unprecedented pandemic in human history. The lifeline that binds the world together in its war against the Coronavirus is wireless communications technologies. Amid lockdowns and social distancing, life goes on seamlessly, aided by the ubiquitous connectivity.

In the new digital normal, 5G is the talk of the town. With the announcements of deployments in Australia, China, South Korea, the UK and US, the new 5G technology is rapidly developing beyond column inches and hashtags into real-world use cases.

Currently, the world has around 90 million 5G subscriptions as of Q1 2020, which is expected to grow to over 258 million connections by the end of the year. India, however, might not see 5G till 2021 owing to a lot of complexities like spectrum issues, inadequate preparedness in terms of infrastructure, and the uncertainty around the sale of radio waves for 5G.

But one thing that is irrefutable is the transformational impact 5G is, directly and indirectly, set to have on almost every aspect of our daily lives. When the time comes, it will be intriguing to see how 5G – the future of next-generation networks – will play out in India. There is more than a kernel of truth in this rhetorical excess. Not least, because the next generation of essential infrastructure in most countries around the globe will be built using wireless technology.

> While 5G will prove to be the true catalyst for the IoT, the analysis and management of the corresponding data is where the true value of these connected technologies really lies.

Redefining experiences

With as much as 100 times the speed of current wireless networks and significantly reduced latency that cuts down on the lag-time between the device and the network, we can use wireless data to enhance our interactions with the world around us. It is also likely to create new opportunities in diverse areas such as manufacturing, transportation, healthcare, education, agriculture, and many more. For instance, zero-latency can enable hospitals to perform effective remote surgeries and offer remote care.

In short, 5G has the real potential to enable industry 4.0 and support new services that in-turn can drive economic growth and job creation for decades to come. Considering the huge population of India, 5G can massively improve connection density and support millions of connected and mobile devices at the same time seamlessly.

The sheer speed of 5G networks will enable 8K screening, VR projections onto the air with no lag-time, and could replace traditional broadband models too. Besides, the benefits associated with its pure speed, people and organizations are still confused about the differences between 5G and its predecessors, and what its industrial benefits could actually be.

Network slicing is probably the most important concept and differentiator to previous generations, as this is the way in which 5G will be able to deliver different types of service with the appropriate latency, security, quality of service, and bandwidth.

Earlier technologies like the 3G and 4G networks already embody the concept of slicing in the form of virtual private networks (VPNs) effectively to create separation for the different types of services. However, with 5G, this is taken a stage further. In addition to hard slicing – for example, using wavelengths or multi-protocol label switching – soft slicing will be used throughout the access and core.

Effectively, this allows a super flexible, agile network, capable of supporting a whole range of use cases, and it's this flexibility which links directly to the enablement of the Internet of Things (IoT) that people are getting so excited about.

Living the (5G) dream

Ultimately the predicted diversity of IoT use cases are the reason 5G is so highly anticipated and anybody who positions the technology merely as an enhancement to consumer mobile services is missing the fundamental point of what 5G will eventually become once technologies such as network slicing hit their stride.

Cisco anticipates that in 2020, IoT will comprise of more than 30 billion connected devices and these devices alone could create some five quintillion bytes of data every day. That's a serious amount of data that will need managing! Security, privacy and reliability are core to the success of any technology, and as networks increase in complexity, the 5G technology will evolve to fight the challenge of growing threats.

While 5G will prove to be the true catalyst for the IoT, the analysis and management of the corresponding data is where the true value of these connected technologies really lies. With such vast amounts of data living at the edge of traditional computer networks, the IoT will put new pressures and demands upon organizations to manage, protect, analyze, and use data like never before. Hence, to get ahead of this future challenge it is important that organizations ensure adequate data management strategies in place today.

Organizations can ill afford to ignore the transformational opportunities presented by 5G and the IoT, and it is important that they understand the fundamentals of the technology building blocks, including data management, and associated regulatory requirements needed to make it work. Only then will the full economic, societal, and environmental benefits of 5G and the IoT be truly realized.

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Resilient, distributed enterprises

COVID has proved that technology can be leveraged to ensure business continuity even in extreme circumstances. It's time for organizations to re-imagine infrastructure

BY ANAND PATIL

We are living in strange times. Ever since we started working from home, interactions with humans have been replaced with talking to their rendered images and reconstructed voices. While nothing can replace a three-dimensional meeting, there is no denying that technology has come to our rescue with viable alternatives at a time like this. It has made it possible for me to continue customer interactions with the same regularity as before.

Over the last eight weeks, I have been able to meet (virtually) with multiple CIOs. Each of these conversations has been incredibly insightful, as they have not only shared their personal experience in dealing with the situation, but also the challenges they faced as an organization, and how they are thinking about the future. While there are some nuances by industry – pharmaceuticals, FSI, ITeS, e-commerce, manufacturing – there are some common themes that have emerged.

For instance, the magnitude of this crisis has prompted businesses to make reactive decisions, due to which they are reviewing and re-writing their business continuity processes (BCPs) in the context of the pandemic. Conserving cash has become a priority for most organizations to tide over these times of lean business. IT projects are being closely scrutinized or re-prioritized, and those without a tangible ROI in the medium-term are either being deferred or canceled.

> As we prepare for the requirements of tomorrow, we must start thinking of IT infrastructure from the outside-in instead of the traditional way of building apps, data centers, networks, and offices.

At the same time, there is a sharper focus on cloud, automation, AI/ML, robotics, IoT, and above all, cybersecurity. As a result, digitization effort is expected to gain momentum, especially in processes like packaging, logistics, manufacturing, etc. We can also expect to see a higher percentage of the workforce transitioning to "working from anywhere" permanently. The road to full recovery could be a long one, and therefore, we will have to pivot existing plans to operate in the new normal post COVID-19.

Overall, there is a realization that technology can be leveraged to ensure business continuity, even in extreme circumstances. Therefore, enterprise IT architectures will now have to be re-imagined, considering the new future of work, which is where the concept of the "resilient, distributed enterprise" (RDE) becomes critical.

Imagine a scenario where you are the CIO of an enterprise where the users – both internal and external – are distributed over offices, temporary workplaces, and remote locations like homes and coffee shops. They access corporate applications on any device and through any network – public or private. The applications themselves are distributed across on-prem data centers (owned/co-lo) and the public cloud (IaaS/PaaS/SaaS). In this "borderless" environment, how do you ensure consistency of experience, compliance, and security? That's where the RDE comes in.

In such an enterprise, the "app" is the business. So, the traditional building blocks of IT infrastructure, such as user access, connectivity, perimeter security, and application hosting, are irrelevant. It helps to start thinking about these "capabilities" instead, that can be supported regardless of location, device, and hosting platform.

User management

In a borderless enterprise, user identity becomes the core element that determines everything else in the process. Most companies today have a centralized identity repository, which can be federated with various service providers as needed. Organizations must leverage this repository for implementing role-based policy authorization like access to HR vs. finance apps, at multiple levels of access – CFO vs. financial analyst.

Combined with Single Sign-On (SSO), which allows employees to use a set of login credentials to access multiple applications, this will make for seamless user experience for application access.

Device management

The second critical piece in this chain is the device itself, which is of three types. One, company-owned, company-managed devices, to which the enterprise has full control and can ensure security and compliance to company requirements, presenting the lowest risk while accessing company assets. Two; user-owned, company-managed devices where the user has to agree to the terms and conditions set down by the enterprise MDM, which exercises a fair degree of control over what is and isn't allowed on the device itself, Three, user-owned, user-managed devices, for which the enterprise has the least visibility and control.

In each case, it is critical to check the posture of the device before authorizing access to corporate assets. If minimum requirements are not met, access is denied. This posture-check can be cloud-based, especially for user-owned, user-managed devices.

Also, a tiered access policy can be implemented based on the device. For example, company-owned, company-managed devices can have full access while user-owned, user-managed devices are restricted to basic apps. Another thing to consider is the location of the device – some apps may be accessed from any location, while more critical apps can be "geo-fenced" to office networks or certain geographical areas – for example, infrastructure management tools cannot be accessed from outside the country.

Experience management

When app is the business, the ability to monitor and manage users' experience proactively becomes paramount. This can be done through an Application Performance Management (APM) platform, which can give end-to-end visibility of the user's journey while

> Enterprise IT will have to be re-imagined, considering the new future of work, which is where the concept of the resilient, distributed enterprise becomes critical.

using the app, and also proactively alert when issues occur – either in the app or the infrastructure.

This capability needs to work across on-prem data centers and the public cloud while providing visibility and pinpointing anomalies within the application code, network, security, and infrastructure components.

Infrastructure management

With distributed apps, it is crucial to create a common operating environment to manage all infrastructure elements – whether private or publicly owned – where the apps reside. The first capability required is a cloud-agnostic, application-centric management solution that helps securely deploy and manage applications across data center, private and public cloud environments. This should offer a governance-enforcing deployment framework mechanism, cost reporting, and visibility into application performance.

The second capability is an infrastructure optimization solution that ensures app performance by automatically scaling up or down resources required for optimal capacity. The third is a visibility platform that provides insights into application dependencies and provides comprehensive telemetry for application segmentation as well as compliance and audit reporting. This visibility platform can also extend itself to the user traffic through RA-VPN.

Robust collaboration platforms

With potentially a large portion of the workforce going remote, they must be provided with mechanisms to replace in-person meetings and interactions. This calls for a robust and secure meetings and collaboration platform.

Apart from the basic capabilities for instant messaging and conference calls, it should be able to support training programs as well as large-format events. Another useful capability is a secure document-sharing platform, which makes it easier to collaborate on content.

Zero trust security

The underpinning of the RDE is zero trust security. Given the open nature of the new architecture, a zero trust approach becomes imperative. To simplify the approach, it helps to think about this in the context of the elements of the borderless enterprise.

For users, this includes SSO, multi-factor authentication (MFA), and role-based access control, in addition to DNS-level protection and cloud proxy/firewall for access to cloud apps. For devices, capabilities like endpoint validation, posture checking, Endpoint Detection and Response, anti-malware, and secure VPN for remote-access are the key. On the application front, it includes workload and application protection through group-level and micro-segmentation and implementation of behavioral analytics for anomaly detection.

All these capabilities and solutions need to be platform, cloud, and device-agnostic.

Once this framework is in place, there is enormous potential to implement automation by starting to integrate various systems and tools through APIs. For example, if the app experience for a set of users starts to degrade due to a capacity overrun, the APM tool can send an alert to the Infra Management tool to scale up resources and resolve the issue automatically.

However, implementing automation across the IT infrastructure is a journey, and needs to consider the company's policies and risk profile. It is good to start small and take one step at a time. In summary, as we prepare for the requirements of tomorrow, we must start thinking of IT infrastructure from the outside-in instead of the traditional way of building apps, data centers, networks, and offices.

The concept of a RDE allows us to envision capabilities that will be required for the future of work – one that encompasses distributed workers, distributed applications and services, served by an underlying, inherently secure infrastructure.

The author Anand Patil is the Director, Systems Engineering of Cisco India and SAARC

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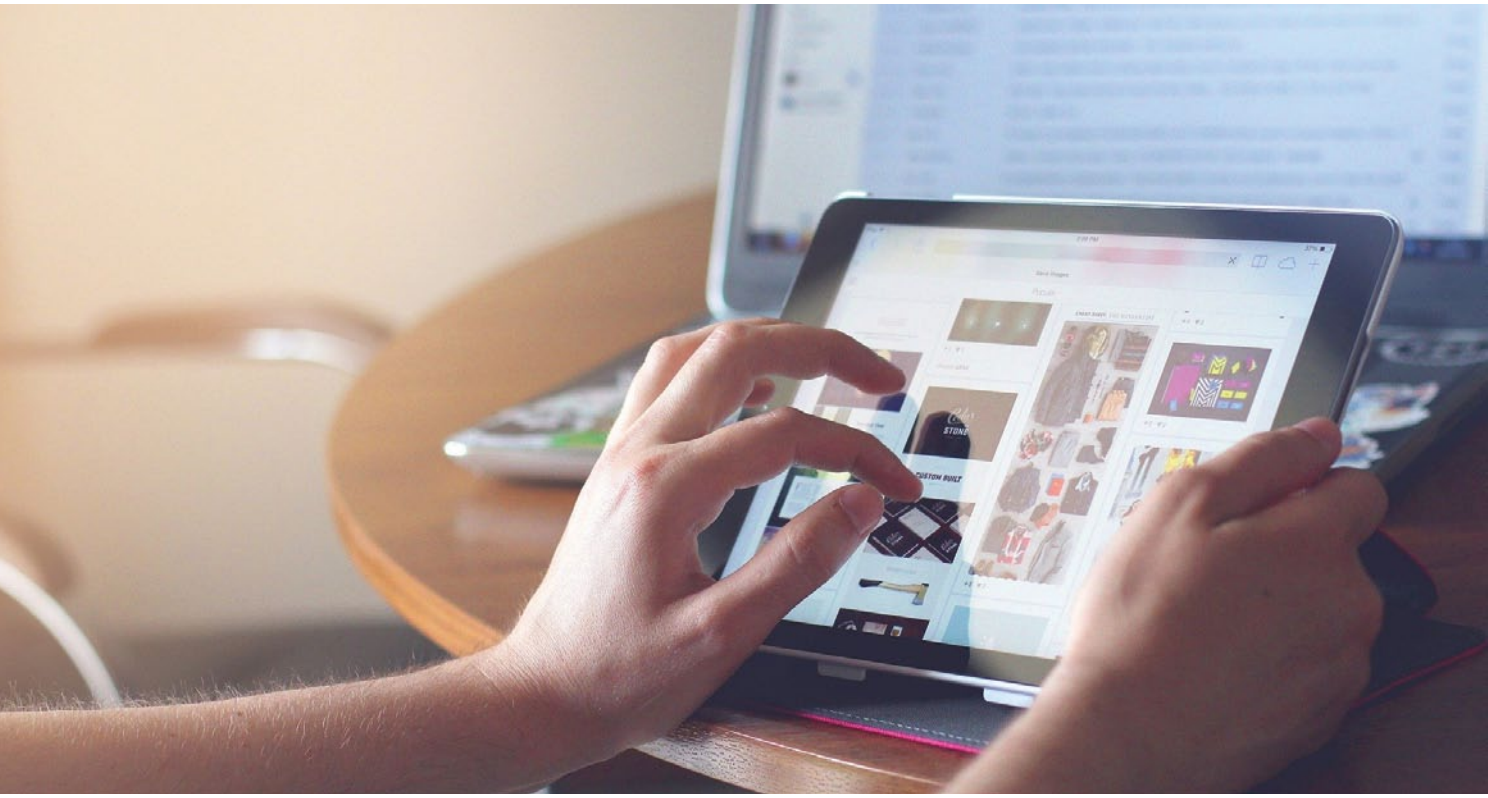
COVID renews focus on secure mobility management strategy

If work from anywhere, anytime, and any device is exposing your business to bigger security risk, it's time to get the EMM and UEM strategy right



BY SOMA TAH

The COVID-19 crisis has brought life and work to a screeching halt in its wake, but businesses managed to stay afloat, thanks to a plethora of smart devices and digital tools at their disposal.

Cloud and Mobile technologies have enabled people to work anywhere, anytime and from any device of their choice. But they have also exposed organizations to a problem which is far more complex than it may appear.

Managing a fleet of corporate-owned and employee-owned mobile devices and securing business data on those devices has never been an easy task for businesses anyway. But with Bring Your Own Device (BYOD) and IT becoming more consumer-centric, businesses are now fighting two battles at the same time. The influx of user-friendly consumer devices and applications into the corporate network made it difficult for businesses to protect the employees from malicious attacks and prevent

> Apart from simplifying device management, UEM makes it easy for employees to access content from anywhere, anytime and through any device.

sensitive business data from falling into the wrong hands. The sudden switch to remote-working mode during the COVID-19 crisis has just added to the woes.

The crisis has demonstrated the importance of always-on application availability as much of the global workforce continues to work from home, F5 Networks India Managing Director Edgar Dias said. "Businesses have seen the urgent need to accelerate their digital transformation efforts to scale capacity for remote access and availability of their business applications without compromising on performance and security. This trend will likely continue through the post-pandemic period," he stated.

According to ManageEngine Product Manager Ananthakrishnan Vaidyanathan, "People working from home and accessing corporate data from unsecured networks posed a major challenge for the businesses in terms of managing the access from those remote devices. Hence, it has become crucial for the IT administrators to ensure that all the mobile devices get updated and patched regularly, and data on those devices remain secure and protected."

Secure mobile workforce with EMM

Enterprise mobility management (EMM) solutions and practices, however, have helped them to securely manage those devices and prevent any unauthorized access to business applications and business data on those mobile devices.

EMM encompasses a range of solutions which can be broadly segregated into three categories, mobile device management (MDM), mobile application management (MAM), and mobile information management (MIM).

While MDM gives organizations the ability to remotely control, encrypt, and enforce policies on mobile devices, MAM enables them to manage mobile applications, including deploying and updating them, applying security policies.

MDM can also be used to wipe all apps and data from the lost or stolen devices, thereby, further improving the security and giving organization better assurance of manageability at the organizational level. On the other hand, MIM gives organizations the ability to manage and secure sensitive and business-critical data on mobile devices.

EMM solutions encapsulate various aspects of enterprise mobility management starting from managing mobile devices and applications, to managing content, and security part of it as well. The EMM needs may also vary from business to business, depending on specific business needs. Hence, they need to decide which of these elements or areas deserve better attention.

Secure endpoints: Is UEM a smarter choice?

Many businesses today feel that EMM solutions are not enough when it comes to endpoint management. For example, mobile endpoints and IoT endpoints are completely different and need different forms of security and management altogether.

Unified endpoint management (UEM) takes a more holistic and cohesive approach to the endpoint management issue, by helping businesses manage the security, compliance, productivity, and resource usage of all their endpoints, irrespective whether the device is a laptop, tablet, mobile, wearable, or IoT-enabled devices. It supports all major OS types as well. UEM, used in combination with cognitive insights and analytics can deliver unprecedented endpoint management capabilities to IT admin.

Many UEM solutions offer users automated enrollment, pre-configuration, and retirement for the devices and personalization and dynamic policy configuration across virtual and physical endpoints as well, which make it a more viable option for endpoint management.

Apart from the simplifying device management for the IT admin, UEM makes it easy for the employees to access any content from anywhere, anytime and use any device of their choice to get their work done.

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Remote-managing the business

Managing new normal may be more challenging than perceived. Here is what organizations must consider before investing in remote access for their workforce

BY ANJANI KOMISSETTI

It would not be right to say that our lives have not been disrupted due to the COVID-19 pandemic. Businesses are struggling to keep their operations up, enable seamless work from home for employees on unstable and unsecure networks, while deadline with the security challenges, the pandemic has certainly forced us to work the 'new normal' way – that is working remotely.

From a business standpoint, requirement is to sustain business continuity with remote access and management.

Industries like digital media, broadcasting and entertainment are already showing a steep rise in their compute and networking needs during lockdowns, as more people are accessing entertainment content or connecting with loved ones.

In the healthcare industry, tele-health and remote monitoring are gaining importance, and more intelligence is being deployed for activities like video surveillance and crowd management to help support quarantine and alleviation measures.

> Organizations must seamlessly incorporate both hardware and software, which may span through multiple sites, minimizing customization and configuration.

According to Market Research Future, the remote access management market is heavily driven by increasing global employee numbers and the flexibility of working from anywhere at any time. It is simple, flexible and provides cost-effective licensing.

IHS Markit has projected that units of KVM (keyboard, video and mouse) switches and consoles purchased in Asia will grow 4.5% annually from 2019 to 2023. Occupying about 45% of the worldwide market, this region shows a growing trend of implementing such solutions to enhance business competitiveness.

This sudden change of method in daily work is easy in theory, but can be challenging to implement. Here are some key features that organizations must consider when investing in and setting up remote access for their workforce.

Centralised and uninterrupted control: Organizations must set up uninterrupted, 24x7 centralised monitoring and control of operations. Monitoring has various aspects, including but not restricted to alerts on the performance of devices and their health, routine general performance checks and detailed investigations.

Ideally, this can be an automated exercise done over the web for management from any place at any time. Round-the-clock access and control allow operations to continue even during unforeseen crises, be it natural or man-made disasters, or a pandemic as the current scenario. Any abnormal activity or potential cyberattacks can be identified and flagged out by tracking remote user and system events and be resolved promptly.

User privilege authorization and security: The admin manager or commander can decide the levels of access and the rights given to different personnel, along with centralised authentication and authorization abilities. Equipment control and access based on user-customisable criteria, combined with consolidated logs and audit trails, helps in protecting corporate resources and system integrity.

Multiple user access: Providing both remote and local access to multiple users – through smartphones, mobile devices, laptops, PCs, and workstations will allow control of equipment by various levels of personnel through a corporate network will create uninterrupted networks.

Remote maintenance: Periodic maintenance of an organization's systems can be both partially and completely automated. It can be conducted in the background or after office hours.

Heterogeneous enterprise systems: It is important that organizations must integrate pre-existing heterogeneous enterprise platforms and systems, including big data analytics and Optical Character Recognition (OCR) technology.

Organizations must also seamlessly incorporate both hardware and software, which may span through multiple sites, minimizing customization and configuration. This will result in reduced time and costs for both setting up and deployment.

Storage and snapshot collection: Supervisors or senior management can automatically collect and save video images or snapshots from equipment to view later, and to also share the status of the device with other users.

While this sounds like a comprehensive list, there may be other features that apply to specific industry such as in case of factory automation and integration with complex proprietary processes.

The Coronavirus outbreak has presented itself to businesses as both an unprecedented obstacle and opportunity. There was never any doubt that adopting a remote management strategy may have been inevitable for businesses in the long run, but the pandemic has accelerated the process and necessitates organizations to go digital much sooner than they anticipated.

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Keeping India connected

Network engineers have emerged as the unsung heroes during the current pandemic, working 24x7 to ensure phones and computers have seamless network connectivity

BY NITIN BANSAL

Today, the world is struggling against an unprecedented challenge in the form of the Novel Coronavirus. To safeguard people from this life-threatening disease, many countries around the world including India are going through a nationwide lockdown. This has forced almost all the businesses to work from home. Further, people in the essential services sectors such as healthcare, pharmaceutical, law enforcement, etc. are working relentlessly to win the fight against this pandemic.

In this time of crisis, information and communications are critical. Mobile networks are an essential part of the communications backbone that is enabling all of us to stay connected. In fact, telecommunications services are categorized as an essential service by the government

> Machine Learning-enabled capacity planning enables service provider to proactively identify and act on network bottleneck issues, while application-based traffic handling can be managed through service-aware configuration.

of India and it goes without saying that the need to be connected has never been more evident.

Staying connected

Our studies have indicate an average 20% to 70% increase in voice traffic across networks with more number and longer voice calls being made by people arising out of the COVID-19 situation. People are spending more time online at home and as a result more traffic is generated every day. Most operators are experiencing a 10~20% increase in data traffic (both upload and download) on the mobile network with video streaming services also contributing to the data increase.

The Indian telecommunications industry has come together to ensure seamless connectivity throughout the country. Service and technology providers have deployed technical staff at their network management war rooms to closely monitor critical operations and ensure uninterrupted mobile and broadband services amidst the lockdown. All necessary approvals and measures have been taken from DoT to ensure all critical service personnel can safely and freely travel during the lockdown to resolve all network-related issues.

Some of the ways by which technology providers are balancing capacity and performance of networks is by reviewing hardware and software capabilities and deploying emergency licenses wherever required. The network features are reviewed to ensure that the planned capacity is fully activated.

Network re-planning and end to end re-dimensioning activities focusing on network design, capacity, performance, and traffic handling are carried out by telecom engineers to ensure that the customer experience from the network is not compromised. Machine Learning-enabled capacity planning enables the service provider to proactively identify and act on network bottleneck issues. Application-based—web, chat, video—traffic handling is managed through service-aware configuration.

Celebrating the heroes

The telecommunications sector in India and around the world is working in collaboration with each other to ensure continued connectivity. Numerous people are working behind the scenes, amidst the COVID-19 crisis to make sure our phones and computers have seamless network connectivity round the clock. We realize the importance of their service to provide connectivity.

Network engineers and field staff today are working around the country to maintain the best possible service and minimize the impact of the disruption caused by the virus. Despite restricted movement, they are conducting site visits and taking up maintenance tasks to ensure that the networks are running, even though some sites are in very remote areas where communities rely on these sites to provide mobile coverage.

Throughout this time, we have been receiving many stories from our network engineers who have demonstrated a great resolve and commitment towards their job.

For instance, in one of the North Eastern Regions, a field maintenance engineer went to restore a site which had been down for two days. In his first attempt, he was unable to visit the site on the first day due to accessibility issues. However, with the help of his local sales team and public officials he was able to visit the site the next day and restore it.

As the heroes on the frontlines are working tirelessly to keep people healthy and safe, the network heroes serve the nation by keeping society connected. Their morale on ground remains high as ever and their service remains of great importance during this crisis and deserves to be acknowledged.

The author Nitin Bansal is Head of Ericsson India and Head of Network Solutions South East Asia, Oceania and India at Ericsson

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[COMMENTARY]
COVID-19

Overcoming 5G adoption barriers

The pandemic has accelerated society's transition to broadband and digitization. There is also the need for enhanced cybersecurity solutions due to remote working

BY TERRY YOUNG

Employees in our company have been under orders to "shelter in place" and nearly everyone is working from home. All schools are closed, and restaurants are open for takeouts only. As my co-workers and friends adjust to this new style of working and connecting, I've noticed a willingness to try new technologies from people whom I thought were very "non-technical." So, in the long-term, this will bode well for overcoming adoption barriers for 5G.

Here are some examples of small companies and individuals that likely would never have explored virtual options for what could be considered "hands-on," non-technical activities – my dance studio has implemented virtual dance classes, including video conferences and YouTube videos with dance instruction and instructor demos. Also, my yoga studio is doing something similar with virtual yoga classes, and the church is providing services via live stream on Facebook.

My nephew, a psychologist, is now exploring therapy sessions via mobile phone, and I believe that virtual game night might be the answer for my family scattered across

> Operators will need to accelerate investment to meet escalating demand. In the long term, the industry may actually get a boost as businesses are forced to try new ways to stay connected.

five states in the US. At work, we now have a "virtual water cooler" meeting twice a week to catch up on what everyone is doing and I downloaded two new apps for my favorite coffee shops.

I'm not alone in thinking that lack of familiarity with new technology or lack of experience in its benefits is being erased as consumers and businesses scramble to quickly come up with alternatives. According to reports, Wall Street research analysts at MKM Partners see consumer willingness to pay for broadband at an all-time high. The analyst firm also pointed out that the pandemic has accelerated society's transition to broadband and digitization by at least a decade. Wall Street research firm Raymond James believes that the COVID-19 efforts are also likely to drive more wireless usage.

Impact of the health

With the Coronavirus crisis continuing to threat human health across the world, the GSMA intelligence has issued warning that the crisis may slow 5G deployment since consumers are now deeply concerned about their financial situation and, hence, more reluctant to upgrade to 5G. There are plenty of evidence that operators will need to accelerate investment to meet escalating demand and over the long term, the industry may actually get a boost as consumers and businesses are forced to try new ways to stay connected.

Industry players like Verizon have reported a 75% increase in bandwidth demand for gaming applications from 8-15 March and a 47% increase in the use of collaboration tools on the Verizon website. On the other hand, NTT Docomo moved forward with its 5G launch – beginning its commercial 5G service in selected areas on 25 March this year.

Australian carrier, Telstra, has decided to put a job-cut program on hold and accelerate investments in 5G deployments due to the outbreak of the COVID-19 in the country and the increased capacity demand. The company's plan includes acceleration of 5G network investment during the current year and hiring of 1,000 temporary workers to handle rising call volumes. Telstra had originally planned its 5G launch in 2021.

Reports also indicate that operators are also stepping up in many ways to aid in the crisis. Spain's Telefónica recently added new features to its entertainment offering, including sports coverage and children's programs, for no extra fees. Similarly, Vodafone Italy has also reportedly been cutting fees for house-bound students and scrapped its usage limits attached to the services used by its younger customers.

Companies like T Mobile, AT&T and Verizon in the US have all responded to FCC guidance and announced plans that waive late fees, not terminating service and introducing new plans to ease stay-at-home situations.

Struggling with IPv4 exhaustion, 5G security

Many operators, including ISPs, cable, mobile and fixed-line service providers, are experiencing some strain to deployed network capacity. Here's a checklist of potential areas that they have identified and that service providers may need to address in this difficult time.

IP Address Pools: Are there sufficient IP addresses in IPv4 or IPv6 pools and in your CG-NAT solution to handle the increased demand?

Security: Are your IP pools sufficiently protected against DDoS attacks? Are critical, public safety/ health services protected against DDoS attacks, and are subscribers now looking for more security options, such as DNS encryption?

The solution lies in high-performance Virtual Network Functions (VNFs) for CG-NAT, ADC, firewall, load balancing, and traffic steering, and other functions that can protect the network and subscribers.

The author Terry Young is Director of 5G Marketing, A10 Networks

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Riding high on the new normal

The current health crisis is redefining how organizations work, connect, and communicate, driving enterprises' preference for communication on the tap

BY VINAY CHHABRA

The global outbreak of the Coronavirus has led to discontinuity and chaos. Not only has the pandemic created havoc in the lives of people, but it has also disrupted the functioning of businesses to a large extent.

With the lockdown being imposed all across the globe, there has been a rise in remote working capabilities. Many companies and industries have adopted cloud-hosted services to ensure their business continuity.

This has led to a sudden rise in the demand for telecommuting services, creating an immediate need for video conferencing, mobile network equipment, VPNs, and cloud telephony. Small and medium-sized enterprises (SMEs) are increasingly adopting cloud telephony services mainly due to cost efficiency as well as the limited capital investment required for deploying the setup.

Cloud Telephony refers to the technology where telecom switching and storage equipment is hosted at the service provider's premises and are made accessible to the customers through the internet—over the cloud.

According to a market report by Transparency Market Research, the global cloud telephony services market is expected to touch USD 41,768.3 million by 2026 on account of cost reductions compared to traditional telephony systems.

The market is projected to expand at a CAGR of 17.2% during the forecast period from 2018 to 2026. Multiple benefits offered by cloud telephony, mobile workforce, and increasing demand for business mobility are some of the factors that have led to the adoption of cloud telephony services by businesses and will drive the growth further.

Global market dynamics

The growth in the global cloud telephony services market is mainly driven by the migration of companies from traditional to IP networks. Europe is anticipated to be a rapidly expanding region for the cloud telephony market, followed by the Asia Pacific during the forecast period.

Telecom operators have planned to phase out Integrated Services Digital Network (ISDN) in countries

The global cloud telephony services market is expected to touch USD 41,768.3 million by 2026 on account of cost reductions compared to traditional telephony systems.

like the UK, France, and Germany, which again opens up lucrative opportunities for the cloud telephony market. Developments in network infrastructure and a rise in investments are said to favor the growth of cloud telephony services in countries like India, China, and the Philippines. Besides, the rise in the number of contact and call centers in America has favored the adoption of cloud services.

Let's take a look at the potential impact of COVID-19 on the telecom industry.

Network usage and resiliency

There has been an exponential rise in the usage of cloud services networks owing to the rapid migration of companies to the cloud. Many countries have also reported a hike in the call volume as demand for call center and helpline services has increased.

However, network reliability has become an area of concern. For instance, Europe is witnessing a decline in network infrastructure due to connection drop rates, lower audio quality, and a drop in connection rates.

Driving customer experience

Telecom companies across the globe are adopting new measures to improve customer experience. Companies in the UK have increased the capacity of networking services and are offering unlimited minutes.

Today, telcos are offering remote working applications at a considerably reduced cost with the work- from-home suddenly growing significantly, driven by the social distancing and lockdown norms during the COVID-19 times. Similarly, the work productivity platforms are offering promotional discounts as more and more people are remote working.

Dealing with financial impact

While majority of businesses, world over, have been negatively impacted by the pandemic, the telecom companies are one of the few industries that have been less affected by the spread of Coronavirus. However, some telcos may still face recession and shortage of cash flow, just like other impacted sectors.

Since the pandemic has caused the cancellation of major sports, technology, and events, may such companies including the media may face the negative impact of advertising-driven revenues. Many companies are also looking forward to investing in a 5G mobile network.

Tracking COVID-19 using public data

Poor communication can lead to misinformation among people. Various government organizations are deploying cloud telephony services to track the spread of COVID-19 by using customer data. In countries with a vast landscape and highly mobile population, cloud telephony offers a perfect solution for the people to stay connected. It ensures business communication and business continuity in these times of crisis.

Telecom subscribers are receiving warnings and updates in their preferred language when they are about to place a call. The auto-response updates them about any new cases in their locality and also informs about the precautionary measures.

Enabling workforce operations

Cloud platforms like Skype enable remote workers to connect anytime and from anywhere. Cloud solutions also promote collaboration among distributed workforces to ensure that the workflow stay efficient.

Managers and supervisors can connect with their teams through voice calls, video calls, and instant messaging. Cloud telephony can play a pivotal role, especially in delivering essential services like health care.

The global economy is facing a recession and switching to cloud infrastructure is one of the best ways for businesses to cut down the expenses. The cloud telephony services are flexible, allowing enterprises to scale up and down according to the business requirements.

The author Vinay Chhabra is CEO of Real Time Data Service

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[REPORT]
TLF DIALOGUE

Crisis, Corona and beyond

While the pandemic forced organizations to go digital in a big way and the TSPs emerged as the key enablers, the new normal will be more virtual, dynamic and telecom-driven

V&D BUREAU

The first Voice&Data TLF Dialogue on the role of telecom in crisis saw the speakers deliberate on the role played by the telecom sector in crisis management, the "new normal" trends, and India's infrastructure needs for a digital economy. The TLF Dialogue was presented by Cisco Systems.

Speaking at the webinar Bharti Enterprises Vice-Chairman and Bharti Infratel Executive Chairman Akhil Gupta said that the telecom sector was better prepared among the industries to face the COVID-19 crisis. "Crisis management is not new to the telecom sector. It has always been on the ground to face the emergencies and exigencies of connectivity and the COVID-19 pandemic was as good as facing earthquake or flood in the country," he said.

Gupta further added that during the initial days of the lockdown, the industry witnessed a superb coordination among telecom equipment and internet service providers who created their war rooms to handle the situation. He, however, credited the Department of Telecommunication (DoT) for its commendable efforts in making this happen.

"The department was proactive in enabling the movement of equipment and people in a timely manner, with the respective state governments also doing their part to help the industry provide seamless connectivity to end-users," he said.

Highlighting that the lockdown that followed COVID-19 crisis led to a massive surge in demand for data, which broke several records and predictions on connectivity, Bharti Airtel Global Chief Information Officer Harmeen Mehta said, "What was predicted to happen in 10 years happened overnight, leaving the telecom industry at its edge on how to deliver services uninterrupted."

Adding that over half the world is running virtually, unlocking barriers that were posed by the physical world, Mehta further said that the companies that were adopting fewer digital technologies, transformed overnight to adapt and adopt next-gen technologies.

"Earlier, negotiations with clients took weeks, but the demand for connectivity and large scale immediate consumption brought the deals to be closed at lightning speed," she stated.

According to Bharti Airtel Chief Technology Officer Randeep Sekhon, the major surge in demand happened at the home front and the pipes grew fatter at the domestic end. "The data consumption pattern differed during the lockdown. The earlier peak hour for mobile data—from 7 to 9 pm—became a whole day affair. A huge shift in this demand has kept the telecom operators working round the clock."

Sekhon also highlighted that the demand from rural areas saw a triple fold jump in voice and data consumption. "During this crisis, a well-established cloud infrastructure allowed Airtel's network to scale at ease, with speed and also ensured that business

"If India enhances its wireless capacity, it can meet the needs of several new business models that are going to unfold in the days to come."

Akhil Gupta, Vice-Chairman,
Bharti Enterprises & Executive Chairman, Bharti Infratel

"Teachings through multiple online platforms and social media will accelerate the consumption of data and telcos will have to reorient their strategies to this new normal."

Harmeen Mehta, Global CIO, Bharti Airtel

continuity is maintained to a large extent with the field engineers doing a great job."

Presenting the infrastructure provider's perspective Cisco Systems' Service Provider Business President for the Asia Pacific and Japan Sanjay Kaul said that the preparedness to deal with the crisis meant mere scaling up of the systems for the company. Highlighting the telecom sector's role, he said that it was possible to be connected because of the lag-free efficiency of the telecom operators and internet service providers.

"In April, when several COVID-19-affected countries were under lockdown, Cisco witnessed manifold increase in its user base. Clocking more than five million Webex meetings, we worked relentlessly to meet the surge in demand for collaborative web tools."

He also pointed out that to support the industry deal with the situation, Cisco offered a six-month free package to its 3,500 new customers who were in need of collaborative tools, many of whom are likely to sign up for a long-term commitment.

"Even though we were aware that the lockdown will push demand, the company did not anticipate the huge surge for online meeting tools, and more importantly double authentication security products. Around the world, all our teams worked remotely to ensure that our customers can also enforce work from home arrangements in a seamless way," Kaul said.

The new normal

The lockdown that led to a sudden shift to work-from-home and the contactless transaction also seems to have hastened the pace of digital adoption and transformation at the individual and organizational level.

Speaking on the new normal post-COVID-19 and the emerging business models for companies, Gupta stated that it was evident that henceforth a lot of work will happen from remote locations for many organizations.

"If this is the new normal then the telecom operators must take the onus to provide robust, deep capacity networks especially in tier 2-3 cities. Telcos need to double their optical fibre capacity and also ensure that the spectrum reaches remote locations," he said, adding that this was the best time for India to consider auction of the 5G spectrum.

"The time is best for Government of India, DoT, TRAI, telecom service providers, and other participants to collaborate and take necessary actions to firm up plans and policies for the 5G launch. The country should also step up its efforts to boost connectivity through wireless connections as wireline connectivity will take longer to scale the reach."

"If India enhances its wireless capacity, it can meet the needs of several new business models that are going to unfold in the days to come, Gupta stated.

Pointing out that the telcos were the bedrock for all the other industries Kaul said that it is vital that all points of connectivity match the new situation. "With the sudden surge in demand for video streaming, conferencing, multiplayer-gaming, and digital payments, networks need to scale up at different levels to meet the demand. The new business models will certainly require high-speed connectivity."

He stressed that there was an urgent need for virtualization of networks combined with high data security. "Cisco is working with most telcos to offer end-to-end virtualization systems and also highly encrypted network security products," Kaul said.

"With all this coming together, I believe that achieving 5G now looks closer than what was perceived. Across the world, the demand for high speed, low latency networks has prompted the telcos to progress with 5G trials and launch. India too has felt the need for an accelerated approach to partake in 5G. I am sure companies like Airtel already have the necessary radios for 5G in place. It will only require the spectrum to be opened up for deployment," he said.

According to Mehta, the COVID-19-induced sudden lockdown has reoriented peoples' lives in many ways driving them to cut off the unnecessary. "The industry is more focussed on accomplishing goals at shorter deadlines. Airtel, in fact, reacted really fast to meet several pressing needs in terms of connectivity. Be it Airtel XLabs or Airtel engineers, everyone ensured that the deliverables were met at the most critical time with no downtime. We were very quick to partner with the government to enable the delivery of Aarogya Setu App. Airtel also partnered with Apollo hospitals at this critical time to enable the hospital to deliver its telemedicine solutions."

Mehta further said that going forward, virtual patient consultations will be the new normal. Minimizing hospital visits and taking the doctor to the patient through virtual means will be the future and Airtel has ensured that the much-required equipment, gears and routers were all installed appropriately to enable the country to realize its telemedicine goals, she stated.

"This will be the most evolving business model in the healthcare industry and the telecom sector will lend shoulders to carry this in the years to come," she said, adding that going forward education will be more online and e-learning solutions will be the game to be played.

"Teachings through multiple online platforms and social media will accelerate the consumption of data and telcos around the world have to reorient their strategies to this new normal," Mehta stressed.

Echoing her points, Sekhon said that telemedicine and e-learning are going to be superimposed on our lives. "I see the demand for Fibre-to-Home and Fibre-to-Building needs growing at a fast pace. As the work environment and learning-from-home have shown a significant shift from the normal consumption pattern, telcos need to align themselves to meet newer demands."

Airtel's CTO also pointed out that wireless will be the mainstay technology of the future. "Although wired connections will exist, consumers will opt for wireless connections owing to its speed and convenience."

Batting strongly for 4G, Sekhon stated that even if 5G comes to India and work along with Wi-Fi 6, it will not be the end of 4G. "We will see 4G and 5G co-exist for many years. 4G will power voice calls and 5G will be needed for high-speed data, for connected technologies and large scale manufacturing and new-age industrialization."

Infrastructure for the digital era

As India adjusted to the new normal conditions, digital infrastructure, including telecommunication network and services, have emerged as the lifeline and backbone of the economy. This has also triggered the debate on what India should do to strengthen the digital infrastructure, its potential impacts on the telecom sector, including network usage and resiliency, the changes for the customer, and the overall financial impact.

Talking about infrastructure needs, specifically in the backdrop of Prime Minister Narendra Modi's call for AtmaNirbhar Bharath, Gupta said that it certainly made sense for India to be self-reliant in a lot many ways. He, however, highlighted that while the country needs to improve on its own manufacturing abilities, there were several goals that the telecommunication sector needs to achieve on priority, which cannot be met without external support.

"Much before we think of self-reliance in telecom sector the industry stakeholders need to take a big step forward on streamlining the mobile tariff plans. TRAI and DoT must work towards implementing common floor price for mobile tariffs. Injection of this floor price into the system will provide a tremendous boost to the industry. Both the government and the consulting bodies should

"We will see 4G and 5G co-exist for many years. 4G will power voice calls and 5G will be needed for large scale manufacturing and new-age industrialization."

Randeep Sekhon, CTO, Bharti Airtel

"Achieving 5G now looks closer than what was perceived. India too has felt the need for an accelerated approach to partake in 5G."

Sanjay Kaul, President-Asia Pacific & Japan, Service Provider Business, Cisco Systems

ensure that each of India's telecom operators are able to achieve revenue maximization," he stressed.

Stressing on the need for all stakeholders to arrive at an understanding, Gupta said that besides investing in spectrum, the telcos also need to ensure that networks remains robust to deal with the new normal. "It is vital to move the money from just spectrum alone to superior networks and this in a way will pave the way for India to realize its 5G dreams."

Pointing out that the new normal was already evident Kaul said that in terms of software defining the networks, telcos have to gear up to the fact that low-cost, agile systems need a big push. "SD-WAN and cloud technologies are shaping today's networks and Indian network operators have to significantly invest in overhauling networks that presently lack speed and depth. The new normal is now demanding uberization of archaic OSS/BSS and CRM solutions. Consumer centric approaches that deal with quick resolutions of queries are going to be new benchmarks for telcos," he said.

He also pointed out that network security is a major area that operators need to work on to build the infrastructure for the future. "Call center agents are working from home and remote operations are now the new normal. All terminals and endpoints need to be secured and investing in security-based software will shape the digital infrastructure of the country," he stated, adding that the AtmaNirbhar Bharat, is a long-term vision for India and a collaborative model with global tie-ups always moves the businesses forward.

Reiterating that remote operation, telemedicine, e-learning, and high definition videos have led to the spike during the COVID times, Airtel's Global CIO said that the new normal has imposed certain need for scaling up of infrastructure. "Legacy systems are undergoing an overhaul and a many domestic and foreign collaborations are bound to happen. We might plan for AtmaNirbhar Bharat, but the telecom industry works only on a collaborative model. We can achieve 5G sooner only with players collaborating across the seas," she stressed.

For Sekhon, building a digital infrastructure for the new normal would require scaling up and modernizing networks. "Even with 5G coming into the picture, 4G will co-exist to deliver voice to remote hilly areas. It is not just about opening up of the spectrum for 5G but also involves investments in fibre, radios, and devices,"

"The success of 5G can be measured only when the country is able to give out affordable 5G supportive devices to consumers," he concluded.

This was first of the three-part telecom service provider and industry interaction being conducted by the magazine and CyberMedia Group. The online panel discussion was moderated by CyberMedia Group CMD Pradeep Gupta..

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[REPORT]
EVENT

Evolving broadband internet in times of COVID-19

The telecom sector has proved its mettle during the current health pandemic. Going ahead, the country needs to focus on building resilient networks for the new normal

BY PRADEEP CHAKRABORTY

The Covid-19 crisis has brought unprecedented challenges for all of us. As we navigate this situation, the role played by broadband Internet has significantly increased. It has suddenly become the centre of our lives for work and communication, and a means to avail all the essentials services.

With the impact of Covid-19, WFH, video conferencing, online clearance of files in the Government, etc., have become the new norms in the industry. This has resulted in the increase in demand and upward movement of data consumption by the existing users.

The Digital Users Group of India organized a webinar, where they examined readiness at the supply side and the aspirations at the demand side.

The participants included N Sivasailam, former Special Secretary – Logistics, Ministry of Commerce; SK Gupta, Secretary, TRAI; P Balaji, Chief Regulatory and Corporate Affairs Officer, Vodafone Idea; NK Mohapatra, CEO, ESSCI; and Manoj Barara, Director, Pre-Sales, Nokia India. Anil Jain, former CGM, BSNL, was the moderator.

Resilient broadband network

Jain said that thanks to coronavirus, the world is shifting to online. There is heavy load on the social media, WFH, broadband usage, etc. There is 25-40% increase in broadband. We used to call data as the new petrol. As online is increasing, everyone now needs broadband. Broadband has reached 50% in India, which means, half the population still remains unconnected. The ITU and the UNESCO have set a target of connecting 75% of the world's population by 2025.

Barara said there has been a massive impact of COVID-19 on the telecom network. This is going to be the new normal. Networks will be shaping the future of our country. Homes have become new offices, generating content, creation studios, etc. The upload and the download requirements are increasing. This is despite the curb on the streaming grade by the OTT players.

Wireless broadband networks have managed to efficiently maintain networks than the mobile networks. We now require bandwidth of 10Mbps or 20Mbps. The resilience of our broadband networks has been commendable. The Broadband Health Index of a city or country would be resilient. India should focus on fibre-based networks for the times to come. 5G is coming and will help with the latency, high intensity traffic, etc.

Mohapatra added that India has been on broadband for a long time. Earlier, broadband was not considered as a necessity, like electricity. We can connect with the rest of the world through broadband. Now, everybody needs connectivity. Today, in rural areas, we also need

> India should focus on fibre-based networks for the times to come. 5G is coming and will help with the latency and high intensity traffic.

broadband. It will have many flavours and changes. We need to meet the challenge of having every possible technology that delivers broadband. Everything is now done remotely. The industry will definitely deliver.

Balaji noted that we have had low teledensity for long. Today, we have over 100% teledensity in the urban areas. There has been a lot of work done by the telecom operators, equipment providers, regulators, etc. The innovation in this sector is second to none. The whole ecosystem has adapted digital. There are solutions for MSMEs, cloud-based networks, etc. During the Covid-19 crisis, there were some extremely difficult situations on the ground. The industry is very resilient.

We have planned for network resilience and BCP in the long term. With the co-operation between the operators and the regulators, we can meet any challenge that comes. Jain agreed, adding that all telcos have increased the capacity, and maintained their networks.

New normal

Gupta said that due to country-wide lockdown on 25 March, the utilization of the bandwidth shifted from the offices to the homes. We were in distress, not knowing what will happen. There was huge pressure. Today, the normal down percentage of a BTS is 1%. Our telecom industry is run by very competent people and it has been very resilient.

There have been online solutions for long, but we lacked the confidence to go on that path. This also happened at TRAI. This new situation forced us to test the water. We found that it was much easier to work from home. The new normal will also reduce congestion on roads, reduce carbon footprint, etc. We need to see whether the educational institutes are ready. Only 2% network is via wireline, and the rest is on wireless networks.

There is a change in demand. We are going to do some very important work for the office. Hence, we will need highly efficient broadband networks. We have cable TV network, so that broadband can be provided via that stream. We need to improve the Wi-Fi networks. Telecom is a critical service.

He alluded to AIIMS Rishikesh, who developed a product that needs to be put on the body of a patient. It is monitored by doctors remotely. They can send a team and have the patient treated, should the need arise.Now, this is dependant of a very stable broadband connectivity.

He said: "We are there for all the verticals. Telecom is critical for everything. It needs to be given priority for the right of way. Problems faced by the industry will be done away with. We need to bring more funds to the sector. There are short- and long-term requirements. There should be a vital, proper infrastructure for people to work. We will be able to augment. Right of way is an issue. We need to have all states to agree to the right of way. There should also be the reach of optical fibre to each home.

Addressing spectrum issues

Sivasailam said that challenges present opportunities. He said: "We are here because of the resilience of the broadband. We need to enhance broadband to such an extent that we, perhaps, would never need to put our mics on mute for a conference. We are talking about massive communications. Handling of big data requires technology. We have also been able to maintain social cohesion as there have not been any riots. Assistance is available, and there is critical communication. Relief can also go to the rural areas."

He added that there is a great deal of rural focus because of Covid-19. We are going to see a change in digital commerce, or digital business. The brick and mortar shops will get digitalized. There will be lot of things on documentation. An authenticated document can come to you only when you are interlocked. There must be an opportunity for people to take this on.

We also have issues related to institutions that are being created. We need to find an institutional solution. With the revival of BSNL and MTNL, they would be perfect to create the new infrastructure. The right of way should also be supported in an institutional manner.

There is also a lack of demand for spectrum. It is true that the telcos are stressed. Failure to address

> MNREGA has 40% component for material. Fibre can be laid and material component can be addressed. Everything else can be taken care of by village panchayats.

spectrum issues will mean India could be behind in 5G. The number of apps in 5G will be huge. Large amount of spectrum and broadband will be available. Active sharing of spectrum is a great step forward. The E and V bands are under discussions with the government. We have not implemented it in five years. We need to address this issue. TRAI has the ability to get things done.

Jain informed the house that the DUG has formed groups for further discussions. These are around 5G, broadband QoS, manufacturing for Atmanirbhar Bharat, capacity building, skill development, MSME for innovation, blockchain, AI, AR/VR, etc.

Right of way and other issues

In the panel discussion, Jain said that India has 685 million broadband connections today. Of this, 439 million are in urban areas and 247 million are in rural areas. We will try and bridge the gap. We also found that only 33% of women have access to broadband. We have to take further steps. To take broadband to the rural areas, there are areas such as right of way, status of electricity, difficult terrain, and low ARPU, that need to be addressed.

Balaji said that Vodafone Idea had signed up with the ITU and GSMA. We also activated a solution called Sakhi. Using a pseudo number, the women phone numbers can be charged. We are trying to oversee education as well. Rural connectivity is a milestone that was achieved recently. Innovations around voice-based communications are also happening. Work is being done by UNO and BBNL. We are currently down to the last 40,000 villages.

Sivasailam added that the quantum of requirement will be much larger. There was no talk about the Common Service Centers (CSCs) earlier. Today, the CSCs are a major thing. We also need to supply rural entrepreneurship. We further need to build on the MNREGA. Through that route, each village panchayat can be given money. MNREGA has 40% component for material. Fibre can be laid and the material component can be addressed. Everything else can be taken care of by village panchayats.

Telecom manufacturing

Jain added that today, we are looking at a self-reliant India. However, we are paying USD 2.7 billion per year for telecom equipment. We should look at manufacturing telecom equipment on India.

Barara said that Nokia is doing a huge investment in India. We are the first to file a new radio for 5G in India. We will be able to serve the needs of India, as well as of a neighbour. We will also be able to control the network. We are managing over half a million base stations all over the world, from India. We are manufacturing, installing and maintaining telecom equipment.

Mohapatra stressed on the need to have telecom companies with products localized here, in India. Service is not an area of concern. The real challenge is R&D manpower.

Sivasailam added that the E and V bands issue was raised. We also had some international presentations. The health-related aspects were discussed. There are no health implications. We would have been one of the first to develop apps for the E and V bands. TRAI recommended that E (71-76 Ghz and 81-86 Ghz) and V (57-64 Ghz) bands should be opened up in the country for the acceleration of broadband penetration. Gupta agreed, saying that there is no problem with these bands, and no radiation. We are the culprits, and not the towers.

On a question related to the National NDCP, Balaji said that NDCP is a fantastic document. The fastest implementation of NDCP will allow us to roll out networks faster. On a separate note, Google Alphabet has been eyeing a stake in Vodafone Idea to take on Facebook, which has a stake in Reliance Jio. This is said to be in an early stage.

Gokul Tandan, Executive Chairman, Cloud Connect, delivered the vote of thanks. We are on the cusp of a new age, new solution, etc. There will be massively scalable networks in the future.

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Connecting the clever countryside

While the potential of the new technology is evident, it is time to start thinking about use cases that can empower the rural areas and bridge the digital divide

BY PRADEEP CHAKRABORTY

Ericsson recently organized the 5G in Rural Areas: Clever Countryside webinar. The participants included Ericsson North America's VP and CTO for Regional Carriers Bill Chotiner, its Head of 5G Marketing Peter Linder, and Carolina West Wireless CTO David Zylka. Dr. Aleks Krotoski, host of Ericsson UnBoxed Office Social Series, said that the conversation will be around 5G in rural communities. "How are you all trying to include the rural areas? They need 5G, if not, more, than the urban areas," he said.

Digital divide

"We have a clear digital divide between the city and the country. Will 5G widen the divide or will it bring all

> 5G has created a lot of flexibility, diversity and advancement. MIMO is a game changer in terms of delivering more capacity out of the network.

together? I believe that 5G will bring it all together. We have seen that Covid-19 has put pressure on everyone. In rural areas, many children could not do their school homework in several cases, as they did not have broadband. It is perhaps, easier in the cities because you have broadband, and there was just the issue of moving from the office to the home," Chotiner said.

Linder said that access to the rural communities in the US is scattered. He said: "We have a third, that have do not have access to broadband. Very few have fixed broadband at home, at 63%. Access to mobile broadband is 71%. In the low-income households, it is perhaps, even worse."

"If this is the situation at the starting front, and you put education on top of that, it is an important gap to close for the K-12 students right now. You educate the children now for the first 9-12 years, and they are absorbing college education in the digital domain. For the rural communities, when the people get to the 20s, it is hard to get them back. We need educated people in the countryside and the cities in the future. This is a central question for the digital divide."

Regarding a brain drain for the lack of connectivity and remote working, Linder added that there are knowledge-intensive industries. We have broadband for the home. In the rural areas, the level of digital professions did not take off or develop quickly. With this crisis, they need to think: we can live in the countryside and do the digital profession. There should be some digital infrastructure for me to consider places worth moving to.

Farming communities badly affected

On the subject of farming communities faring, Linder added that the cost of building the infrastructure is increasing. Market forces drive the development of broadband. For these rural communities, you also need to give incentives to get investments taking place, in the first instance.

The farm roads were not great, so they can go and shop on the weekend. We also need a distribution system for the farm goods, foods etc., such as going from the countryside into the city. Getting those kinds of perspectives for broadband will help a lot. It will take a village to close the digital divide.

This issue came out when Ericsson was discussing smart cities. The problems like smart cities are too much for countryside. They have their own challenges. We will need the same infrastructure for remote education, remote health, connecting farms, recreation areas, and outdoors.

Zylka said: "One of the key components of the clever community or smart cities is connectivity. Over 1/3rds of the US households don't have broadband connectivity. It forms the basis of the digital divide. The digital divide is much clearer to the people as they try to conduct digital business, remote connectivity and WFH. It all starts with providing connectivity. We have to get smart about how we deploy networks and where do we deploy them, in order to make rural America smart."

He added that Carolina West is in the Appalachian Mountains. It is a rugged terrain, and there is a challenge to provide cost-effective coverage to every town, community and household within the footprint. It is a very scenic country, but very difficult to provide coverage to every area.

How can 5G help rural areas?

On the topic of how 5G can help rural areas, Zylka said 5G capitalizes on what you have done with 4G. It enhances the capacities, connectivity and devices, especially, IoT. There are a lot of goals associated with 5G. People get exposed to high-quality broadband access. They look for the same type of service when they are working, vacationing, or just connecting with people. With 5G, the level and the quality of service also rises. We need to provide these people with equivalent service. Connectivity is so critical to make cities smart.

Linder added that you might ask: with 4G, isn't there enough for us? These are the things that contribute to the digital divide. For example, there was an earlier mindset regarding dial-up. These are the kinds of things that lead

> Countryside has its own challenges. People there need the same infrastructure for remote education, remote health, connecting farms, recreation areas, and outdoors.

to the digital divide. If you buy a phone similar to a city guy, why would you want a network that is worse? They would feel: we don't want to have anything worse than what folks in the city have! That's the only way we can compete in the digital economy.

Criteria for clever countrysides

Dr. Krotoski asked the panel regarding the criteria you look for clever countryside. Chotiner said that 4G provided Internet connectivity, wirelessly. However, 5G provides Internet that is much more flexible, better and delivers information faster. There are greater throughput rates. When we are thinking of delivering information faster, we can do that with 5G. Anything that you are building today, you look for 5G compatibility.

In the future, there will be new services and new demands. Ultimately, people will expect the same type of connectivity. Places everywhere should be able to provide that type of broadband. There should be stable connectivity in cities and countryside.

The pain points

Regarding the pain points associated with 5G networks, Chotiner felt that one of the challenges is the cost of building the network, and hitting all those locations. There is also the cost of maintaining these networks. There is time needed to build the networks, and the fibre networks.

In reality, it is taking many years to roll them out. You should also be able to offer other services on the network. As we start to enhance the network capabilities, we look at evolving it to new areas. We also need to build a future-proof network, as the use cases and demands evolve.

Is 5G in rural area feasible?

On the topic of 5G being economically feasible in rural areas Chotiner felt that the cost of building a network is more feasible in rural areas. FWA is about providing broadband to the homes. We are seeing increasing demand for broadband, greater speed. Operators need to be providing new services. The IP-type connectivity in the house enables a lot of new services. Be it, offering TV or alarm services, etc.

The operators would need radio spectrum to be able to provide all that. 5G has created a lot of flexibility, diversity and advancement. MIMO is a game changer in terms of delivering more capacity out of the network. We are also talking about beamforming to the home. We have all the big brains of the world looking at the technology and wondering: how do we take it, where do we take it, etc.

We also see a significant drop in prices of equipment in the households. We are seeing a lot of stimulus programs. There is a global need of getting broadband to everybody. Regarding 5G in itself, you can deploy networks, but you don't deploy every tool in every area.

Design for future

Dr. Krotoski felt that FWA is one of the first use cases. How do you design for the future? Chotiner agreed that FWA was one of the first use cases. When you look at IoT, it is connecting things to each other. There are sensors too. However, that's been around. IoT has been around for a longer time, and has become more advanced and mainstream in recent years. For example, soda machines have been connected for a long time. You can now have wireless production facilities, wireless healthcare, etc.

Zylka said that they are seeing a lot of people wanting to be connected – to services, platforms, etc. It all starts with basic connectivity. It is also about educating the customers as to what the networks bring to them. Once Covid-19 happened, the uptake of fixed wireless went up over 300%. It helped us to communicate with our customers. It sparked a dialog with them. We told them: here are the features, services and opportunities for you to consider. FWA is a critical component. Another is tethering your handset or user device. People are saying that they need connectivity. We have the tools and the capability to connect these people.

International rollouts

On the topic of the international rollout of 5G in rural areas, Linder said that if you look at the rural areas in

> The average data consumption in India is higher than the USA. There, the mobile is so strong that it is the logical platform to build from.

the Scandinavia countries, there is much better interest to use 5G. So, we are replacing copper wires. Instead of upgrading the 4G network and the fixed wireless, there is just one 5G network infrastructure.

India, perhaps, has a significantly smaller amount of fixed lines in place. There, broadband has been a mobile phenomenon. The average data consumption in India is higher than the USA. There, the mobile is so strong that it is the logical platform to build from.

In some other countries, the outskirts of the towns can be challenging. Houses are separated and the cost of building is higher. There are highways, connecting cities. Some have fibre, and some don't. You either use fibre or microwave technology for bridging the capacity. The real rural areas or farmlands are also there. They present problems and opportunities. It all starts with having a vision of being wanting to be a part of the digital community of the future. The rural community needs to use this opportunity to be a part of the future.

Zylka added that when you look at telecom in general, the urban areas are covered by the large companies. That makes complete economic sense. As you move to the rural areas and countrysides, the companies and communities have struggled. How do you bring advanced technologies to these areas? The key to that is the government. They should be funding, and there should be people There are well-organized entities who are also helping the government with business cases.

We need to help them to do that. We also need to decide how and where to build our networks. You go out to the communities and gather support. We ask them the question: if we build this network, will you sign up for this? Gone are the days where we build a network, and hope that people will sign up. You need to ask: we are building this network, and will you sign up? The answer is yes, in a lot of cases.

Cost demand

Finally, there was a question on the cost demand. Chotiner explained that with 5G, you need to be smart about how you build it. There are high-band networks being deployed in cities. Can we deploy them in rural areas? There may be schools. However, you don't deploy them everywhere. You need to think about where you are building it.

You are building the network for the future. You are modernizing. The technology has evolved quite a bit. They are putting in 5G equipment, waiting to turn it on, when the time comes. FWA is a compelling case, for now. Other new cases will also pop up. He would rather be betting on 5G, looking forward. Linder added that the rural communities play a very important role in all of this.

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BIF calls for early adoption of TRAI's public Wi-Fi recommendations

India's telecom sector think-tank Broadband India Forum (BIF) has called upon the Department of Telecom (DoT) to accept the Telecom Regulatory Authority of India's (TRAI's) recommendations on the Proliferation of Broadband through Public Wi-Fi Networks.

Hailing TRAI's 5 June 2020 response to the DoT Back Reference to its earlier recommendations, BIF stated that its implementation will enable the government to realize its "Broadband for All" and "Digital India" objectives, and also help meet the current requirement of "Work from Anywhere".

It further backed TRAI's vision of opening up the sector for provision of broadband services through a plethora of smaller players, via a simple process of registration using the unbundled and distributed service model, in contrast to the existing vertically integrated service-based model.

"It will result in explosive growth in business and employment opportunities for small local or village-level entrepreneurs, the kirana stores, tea-shops and the likes, besides providing affordable broadband to all," BIF stated in a press release.

The think-tank also pointed out that going by the by World Bank's 2009 report that a 10% increase in broadband penetration leads to a 1.38% increase in GDP growth for low-income countries like India, "the country could have suffered a large and irretrievable loss" during "the four years that these recommendations remained unactioned".

Quoting a 2017 report of ICRIER that highlighted that a 10% increase in total internet traffic in India leads to a humungous 3.3% increase in GDP BIF said, "If these TRAI recommendations had been accepted back then, the common man, the economy and the nation as a whole would have reaped rich and wondrous benefits."

Pointing out that liberalization of the broadband sector will unleash immeasurable benefits to the citizens of India, the economy and the entire nation, BIF President TV Ramachandran said that the move will encourage village level entrepreneurship and provide large employment opportunities at local levels, especially in rural areas, thus propelling socio-economic development and inclusion, as well as rural digital connectivity.

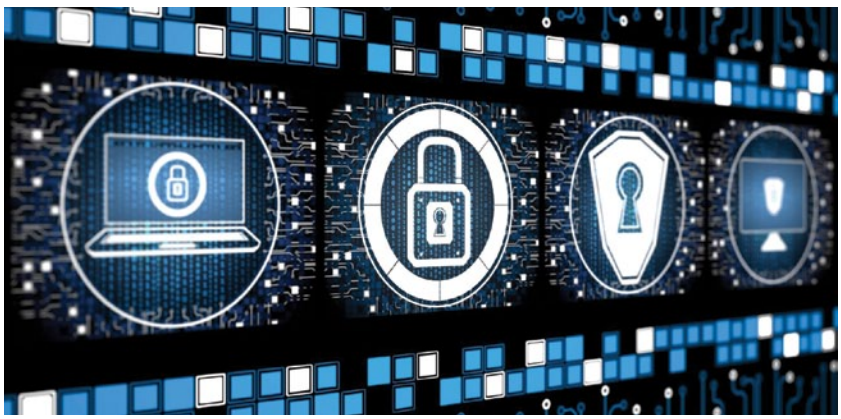
India's broadband penetration is currently less than 50% if one reckons the unique subscribers, although according to TRAI, there are approximately 686 million total broadband connections, a majority of whom are in urban areas and have multiple SIMs. However, the percent of users accessing broadband via public WiFi hotspots are minimal due to lack of availability of the same.

According to Cisco Annual Internet Report, 2018-2023, India has 0.1 million hotspots (as per TRAI) as compared to the global availability of 169 million hotspots. The report also predicts that by 2023 there will be nearly 628 million hotspots globally.

"If we go strictly with the above projections and the size of the Indian telecom market (having about one-sixth of the total telecom subscribers in the world) by 2023, at least 100 million public Wi-Fi hotspots should be there in the country," BIF stated, adding that according to the National Digital Communications Policy (NDCP) 2018 India is supposed to have five million hotspots by the end of 2020 and 10 million by the end of 2022.

The industry body also stressed that TRAI's recommendations "are in perfect alignment with the objectives of the universally-lauded NDCP 2018, which clearly state that the policy aims to pursue regulatory reforms to ensure that the regulatory structures and processes remain relevant, transparent, accountable, and forward-looking."

Palo Alto Networks unveils ML-powered nextgen firewall



Palo Alto Networks has announced that it is launching world's first machine learning (ML) -powered next-generation firewall (NGFW), plus a containerized version of the firewall, and a new IoT security service.

The new firewall embeds ML in the core to proactively assist in intelligently stopping threats, securing IoT devices, and recommends security policies and is aimed to enable organizations defend their ever-increasing points of entry against cyber attacks that continue to morph and rise, the company stated in a press release.

The company also claimed that the firewall PAN-OS version 10.0 can help protect against up to 95% of the unknown file and web-based threats instantly, and automate policy recommendations to save time and reduce the chance of human error. It can also adapt and provide instantaneous real-time protection and extend visibility and security to all devices, including unmanaged IoT devices – without the need to deploy additional sensors.

"Thirteen years ago, we completely changed network security when we created the Next-Generation Firewall," Palo Alto Networks founder and Chief Technology Officer Nir Zuk said, adding that, "as enterprise networks are widening – with hybrid clouds, IoT devices and home offices – and attacks rapidly and automatically evolve, we again need a radical new approach to cybersecurity."

"It ushers in the world's first ML-Powered NGFW, which is continuously learning and proactively improving security across multiple fronts, so security professionals don't just keep up but get ahead," he stated.

The new offering also includes ML-based integrated IoT security and security policy. It uses machine learning to analyze vast amounts of telemetry data, and then recommend policies. With PAN-OS 10.0 and IoT Security, organizations will be able to view and adopt the IoT security policy recommendations for safe device behavior. "This will save time, reduce the chance of human error, and help secure IoT devices," the company said.

In addition, PAN-OS 10.0 also introduced the CN-Series, a containerized form factor for the ML-Powered NGFW, and 70+ innovative new capabilities, including easier decryption, high availability clustering, a new high-performance hardware card, Threat Prevention and DNS Security enhancements.

Cisco rolls out SASE platform

Cisco has announced that it has added new capabilities across its intent-based networking portfolio to give customers greater control, security, insights to drive better digital experiences.

According to a company release, Cisco SD-WAN powered by Viptela now offers complete cloud-native security through the integration with Cisco Umbrella to deliver protection to enterprises against major web attacks arising from SaaS and Internet access.

Cisco Umbrella offers a secure web gateway (SWG), DNS-layer security, firewall, and cloud access security broker (CASB) functionality in one integrated cloud service. "This convergence of security and networking is a crucial step for customers as they move towards Secure Access Service Edge (SASE) architecture," it stated. Other new SD-WAN innovations include support for multicast and integrated voice and unified communications.

"With the announcement, Cisco is helping IT rapidly roll out advanced networking and security capabilities by simplifying and automating segmentation and cloud-based security at scale. We're delivering on our promise to build a networking platform that continues to deliver innovation to help customers, no matter where they are on their intent-based networking journey," Cisco's Intent-based Networking Group Senior Vice President and General Manager Scott Harrell said.

Qualcomm announces 5G Snapdragon 6-series mobile platform

Qualcomm Technologies has announced the launch of Snapdragon 690 5G Mobile Platform, its first 5G mobile platform in the 6-series. "This new platform is designed to make 5G user experiences even more broadly available around the world. It also supports remarkable on-device AI and vibrant entertainment experiences," the company said.

Devices based on Snapdragon 690 are expected to be commercially available in the second half of 2020. AHMD Global, LG Electronics, Motorola, SHARP, TCL, and Wingtech are among the OEMs/ODMs expected to announce smartphones powered by Snapdragon 690.

"With over 375 5G designs launched or in development to date using Qualcomm Technologies' 5G solutions, we are driving the proliferation of 5G across multiple tiers to make the next generation of camera, artificial intelligence and gaming experiences more broadly available," Qualcomm Incorporated President Cristiano Amon said.

The Snapdragon 690 brings many of the most in-demand premium mobile experiences to the 6 series, including 4K HDR (true 10-bit) support to capture over a billion shades of color and snapshots at up to 192 Megapixels. "It also supports 120hz displays for fast refresh rates and smooth UI experiences. Plus, 5G connectivity gives gamers superior access to cloud-based, multi-player games virtually anytime, anywhere," a company release stated.

Snapdragon 690 is equipped with the latest 5th generation Qualcomm AI Engine, enabling smart camera and video, voice translation, advanced AI-based imaging, and AI-enhanced gaming experiences. Additionally, it features the company's Kryo 560 CPU that delivers up to 20% performance improvement compared to its predecessor. Besides, Qualcomm has optimized its Snapdragon X51 5G Modem-RF System for the 6-series platform to bring multi-gigabit speeds and superior 5G coverage.

Movements

SHANTANU PREETAM JOINS PAYU AS CHIEF TECHNOLOGY OFFICER

PayU has announced the appointment of Shantanu Preetam as the Chief Technology Officer to lead the company's technological innovations and engineering. He will be based out of Bangalore.

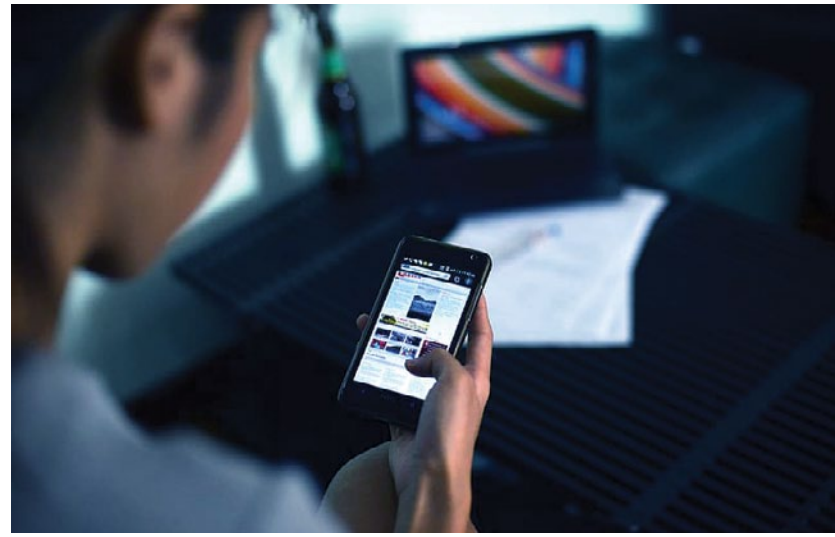
A seasoned technologist and engineering leader, Preetam has over 23 years' experience in building software products and driving digital transformation strategy. An expert in creating "customer-first" technology solutions, he has led and mentored global teams to build highly scalable cloud platforms like omni-channel and e-commerce platforms, transportation systems enabling fulfillment and last mile, and CRM systems. His last stint was at Walmart where he played an integral role in building core e-commerce systems, driving end-to-end cloud transformation and facilitating growth.

AVAST APPOINTS NICK VINEY TO LEAD TELCO, IOT BUSINESS

Avast has appointed Nick Viney as Senior Vice President and General Manager for its Telco, Internet of Things (IoT) and Family business unit. Viney will oversee the company's global strategy for the business unit and will lead the development of its position in smart home security. He will also be responsible for expanding the company's overall portfolio of security products and partners including telecommunications providers and Original Equipment Manufacturers (OEMs).

Before joining Avast, Viney served as the Group CEO of Cyber 1, a publicly listed enterprise cybersecurity provider. He has also worked as the Regional Vice President at McAfee in both the consumer and corporate sectors during his time there.

Sinch AB acquires ACL Mobile for Rs 535 crore



Sweden-based cloud communications provider Sinch AB has announced that it is acquiring ACL Mobile Limited in an all-cash deal of Rs 535 crore. Founded in 2000, ACL Mobile is a provider of cloud communications services in India and Southeast Asia. Its platform enables businesses to interact with their customers through multiple channels including SMS, voice, email, IP messaging, and WhatsApp.

The acquisition will allow Sinch to expand its reach in the region and to leverage ACL's direct connections to mobile operators in India, Malaysia, and UAE and offer end-to-end connectivity, without unnecessary middlemen.

Speaking on the acquisition Sinch AB CEO Oscar Werner said: "With ACL we gain critical scale in the world's second-largest mobile market. We gain customers, expertise, and technology and we further strengthen our global messaging product for discerning businesses with global needs."

ACL serves more than 500 enterprise customers and is particularly successful in the banking and financial services industry. It offers Axiom platform offers intelligent routing and granular access controls that specifically cater to the stringent security requirements of demanding financial institutions.

"Together with Sinch, we are scaling up to become one of the leading global players in our industry. I'm excited about this next chapter and the many new opportunities that we can pursue together," ACL Mobile founder and CEO Sanjay K Goyal said.

Spirent to help Rakuten in core network testing

Spirent Communications announced its extensive work with Rakuten Mobile in support of the operator's current LTE services, planned 5G Non-Standalone (NSA), and Standalone (SA) rollout in Japan for its world-first fully-virtualized cloud-native mobile network.

Rakuten Mobile required ground-breaking testing capabilities to assure the performance of new services and selected Spirent Landslide for core network testing. With LTE services now live and deployment of its 5G NSA network planned for later in the year, Spirent will work with Rakuten to ensure a solid customer experience.

"We are excited to collaborate with Spirent for core network testing," Rakuten Mobile Representative Director, Executive Vice President and CTO Tareq Amin said. "Given their extensive in-region and global MNO/MVNO experience, advanced methodologies for testing fully-virtualized networks, and the ability to serve in a consultative role, we are confident that the collaboration will allow us to offer innovative and exciting next-generation mobile services," he said.

Spirent's work with Rakuten Mobile has been defined by the use of advanced automation processes that expedite testing, including for complex 5G NSA and SA testing scenarios. As new services are tested for deployment to subscribers, Rakuten Mobile is also using the Spirent iTest network automation and verification solution for regression testing to speed validation timeframes, allowing Rakuten Mobile's engineering teams to remain focused on new service creation for subscribers.

Nokia demonstrates live C-Band network

Nokia has announced that it has successfully completed a series of Over-the-Air (OTA) 5G NR (new radio) trials in the C-band spectrum. The demonstration was performed in Dallas' Cypress Waters neighborhood using Nokia's AirScale 5G base station equipment that is an industry-leading, commercial end-to-end 5G solution enabling operators globally to capitalize on all their 5G spectrum assets (from 600MHz to 39GHz).

The drive tests, which achieved stable peak throughput speeds of over 1 Gbps confirmed that Nokia's solution is ready for commercial deployment in the US, ahead of the country's C-band spectrum auction in December, the company said in a release.

The C-band, between 3.4 GHz and 4.2 GHz, is a crucial resource for operators to offer the best mix of 5G network capacity and coverage to subscribers across the US. Nokia's solution is based on its AirScale 5G radio frequency (RF) products. It has a full portfolio of 3.5GHz solutions, including 64TRX and 32TRX massive MIMO for extreme capacity; 8T8R radios for deployable coverage solutions; 4T4R micro RRH for street level and venue deployments; and Indoor pico RRH to provide extensive in-building coverage.

It offers huge capacity scaling and market-leading latency and connectivity by enabling all air-interface technologies on the same radio access equipment. The setup utilized 100 MHz of spectrum at 3.75 GHz with a 4x4 MIMO and configuration in Non-Standalone (NSA) mode combined with Nokia's Core network. During drive testing, Nokia monitored network performance and demonstrated that the 'handovers' successfully happened between C-Band base stations as expected. The connection and performance were stable throughout the entire test, highlighting the robustness of the solution and its readiness for commercial implementation.

Verizon expands VNS portfolio with Cisco ENCS

Verizon Business is expanding its Virtual Network Services (VNS) portfolio for enterprise customers with the introduction of Cisco's 5000 Series Enterprise Network Compute System (ENCS). Announcing this, the company said that the Cisco ENCS purpose-built platform will now be included within Verizon's catalog of virtual network functions and service chains that are offered to customers.

Verizon's VNS portfolio allows customers to replace traditional network devices, such as routers, firewalls, and switches, with virtual network functions (VNFs), which can be managed and orchestrated from a central location. VNFs help expedite customers' digital network transformation by reducing or removing the need for manual intervention, building flexibility and agility into an organization's ability to scale capacity, prioritize application availability quickly and respond to changing business needs. "The Cisco ENCS is a purpose-built compute platform optimized for Network Function Virtualization," it stated.

"The addition of Cisco's ENCS compute platform to our VNS portfolio is another way for us to help enterprise customers simply deploy enterprise networking solutions for a more responsive, scalable and flexible network," Verizon Business Products Senior Vice President Aamir Hussain said.

Acting on data in real-time challenge for marketers in India

Marketers in India rank the inability to act on data in real-time and the lack of an omnichannel marketing strategy as the two biggest challenges they face. According to research by Resulticks, marketers rated personalization (75%), unified 360° customer view (64%), and seamless customer journeys (37%) as the three most critical initiatives for an omnichannel engagement strategy.

However, a majority of those marketers also noted that their existing martech platforms underperformed in key omnichannel capabilities such as multichannel execution and data consolidation. The research conducted by Valuvox surveyed 414 senior marketing executives across 17 industries spanning multiple businesses types and sizes.

"As new channels proliferate and consumers become more digitally savvy, India's businesses are challenged to transform how they engage with their audiences," Resulticks co-founder and CEO Redickaa Subrammanian said, adding that organizations leading the transformation has embraced an integrated, truly omnichannel approach and developed the capabilities and insights to deliver, analyze, and individualize customer journeys in real-time and across touchpoints.

The research also revealed that when it comes to marketing channels, website, and email remain dominant in the Indian marketer's omnichannel mix, followed by SMS and in-person interactions. "The leaders are adding new elements to their communication mix, which encompasses social media (54%) as well as QR codes and beacons (28%)," it stated.

According to the reports, businesses in India exploring possible technology offerings to support an integrated approach to customer engagement selected multichannel campaign orchestration (50%), a unified view of data across channels (43%), and multi-touch attribution (27%) as key priorities among the most critical platform capabilities.

ATEN launches HD streaming solution

AV/IT connectivity and management solutions provider ATEN has unveiled a series of live streaming and broadcast solutions including a multi-channel AV Mixer, HDMI to USB-C UVC video capture, DMI to USB-C UVC video capture with PD3.0 power pass-through, and Dual HDMI to USB-C UVC video capture.

"These four products provide compelling advantages to corporate for online training, conferences, tutorials, live events, as well as individual blogger live broadcasting," the company stated in a press release.

According to the company, StreamLIVE HD multi-channel AV Mixer is tailor-made for pro-level personal live streaming, commercial product promotion, video conferences, small live streaming events, lectures, and seminars. "It offers users the simplest, all-in-one live streaming solution by integrating dual-source 1080p video capture, 4K preview output, video switch, 1080p@60 stream broadcaster, video converter, video splitter, and audio mixer into one compact box," it said.

StreamLIVE HD also eliminates the hassle of working with different AV equipment or any complicated software settings, and is optimized for the easiest operation. "The hardware control panel and the control app turns iPad into a touch interface for controlling, preview monitoring, real-time editing, and arranging multi-elements into program mixing," the releases noted.

"We are happy to bring versatile live streaming and product solutions in India for online services in schools, places of worship, marriage halls, music show, etc. These products are very easy to transport, quick to set up and are crafted to increase the professionalism of streaming," ATEN PSM ProAV Shyam Tambatkar said.

Kerala startup launches IoT-based dustbin to beat COVID-19

As India fights Coronavirus in several ways to stop the ravaging virus in its spread, disposing of used masks and PPEs also needs to be managed effectively as part of the fight constant against COVID-19. VST Mobility Solutions, a startup headquartered at Cochin, has a solution to this. The startup has launched an automated mask disposal machine as part of efforts to develop products helping to combat the COVID-19.

The disposal device, named BIN-19, a UV-based face mask disposal bin technology from the Sree Chitra Tirunal Institute for Medical Sciences and Technology (SCTIMST), Trivandrum was formally launched by Ernakulam District Collector S Suhas by installing a unit at his office, the administrative headquarters of the district.

The IoT-based BIN-19 is used for collecting and disinfecting used face masks. Explaining the process followed by the BIN-19 VST Mobility Solutions CEO Alvin George said: "The used masks dropped inside a container of the bin will be first disinfected by a process. The disinfected masks will be transferred to another container inside the Bin. The person dropping the mask can sanitize his/her hands with the help of the automatic sanitizer dispenser attached to the Bin-19."

He further informed that there is no need to touch or operate any switches in the bin to do all these. All functions are automated in the hands-free equipment for the safety of users and health workers since it includes an auto sanitizer dispenser, mobile application to navigate and find Bin-19, and alerts for the web portal status, power on/off, and whenever the box is opened.

The company also informed that it has launched UV SPOT, a UV light-based multipurpose disinfector. "It is a multipurpose disinfector device with ultraviolet disinfection lamps. With internal reflective surfaces and UVC Lamp the device disinfects a board range of microorganisms," the company stated.

iValue, Akamai to provide intelligent edge security

iValue InfoSolutions has tied up with Akamai Technologies to offer its Intelligent Edge Security Platform for core, cloud, and edge architecture. "The platform enables 24/7/365 protection for websites, applications, APIs, and users," the company said in a press release.

"iValue is thrilled to partner with Akamai, with whom we see a world of unimagined potential enabled through the unique power of the Akamai Edge. It's this power that creates the agility our customers need to accelerate and secure their multi-cloud world and own their digital future," iValue InfoSolutions Chief Growth Officer Harsh Marwah said.

He further added that iValue's customers and channel partners will relish Akamai's product quality, excellent support, and trusted high security. "It gives us immense pleasure to be associated with a technology enabler that boasts of a powerful ecosystem. iValue's GTM strategies augers well with our product roadmap; we are also eager to capitalize on iValue's strong Regional Partner base," Akamai Channel Sales Director Pratyush Raj stated.

Get smart with connectivity

Digital is the only way forward but there is a need to bring in more equality; we have to get smart about how we deploy networks and where

Pradeep Chakraborty

We are now in the fourth month of lockdown. There are steps being taken for opening up the country and the economy again. All of us need to progress with caution as the number of COVID-19 cases are still rising. There is no sign of any vaccine, yet. So, keep these two points in mind, before progressing. There is a need to focus on the standard operating procedures (SOPs) as well.

Telecom has continued to provide connectivity for all, across the world, and in India. It is clearly being seen as the essential, must-have service in a pandemic. Imagine what it would have been like, had the pandemic happened in the 1990s or even, the early 2000.

As the online access is steadily increasing across India, everyone now requires broadband. Apparently, broadband has reached 50% across India. Which means, almost half the population still remains unconnected.

There is a clear digital divide between the city and the country. Will 5G widen the divide or will it bring all together? Covid-19 has put pressure on everyone. In rural areas, children cannot do their school homework in several cases, as they do not have broadband.

It is perhaps, easier in the cities, as you have broadband, and there was just the issue of moving from the office to the home. Places everywhere should be able to provide stable broadband. There should be stable connectivity in cities and countryside.

There is a clear digital divide between the city and the country. Will 5G widen the divide or will it bring all together? Covid-19 has put pressure on everyone.

India has a significantly smaller amount of fixed lines in place. Broadband has been more of a mobile phenomenon. The average data consumption in India is higher than the USA. The mobile is so strong it seems to be the logical platform to build from. The resilience of India's broadband networks has been, so far, been commendable. However, India should look at manufacturing telecom equipment from India. Some more bands need be opened up in the country for the acceleration of broadband penetration.

The digital divide is clear to the people as we are all trying to conduct the digital business, do remote connectivity and apply WFH. We have to get smart about how we deploy networks and where we deploy them. Don't we?

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