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**Future Look: New Way to WAN for Enterprise People, Places & Things**

By Richard Slawsky  |  Contributing writer,
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The forces of cloud, mobile and the Internet of Things are combining to transform enterprise networks. Information technology departments are now faced with the challenge of providing connectivity to people, places and things anywhere, while ensuring visibility, security and control.

Existing network management paradigms, developed decades ago, were designed around fixed branch networks accessing applications within private data centers. Today, though, connecting people and things over the Internet and deploying applications within the public cloud represents a dramatic increase in the number of remote network endpoints that need to be managed.

In addition, many of those endpoints are connected wirelessly, adding additional concerns about security and compliance.

## The coming disruption

There's no doubt that the face of both the enterprise workforce and the network is changing.

Research by Framingham, Massachusetts-based IDC predicts the U.S. mobile worker population will increase to 105.4 million in 2020 from 96.2 million in 2015.

> **"The disruption that's being caused by mobility and the Internet of Things is becoming a big part of the enterprise."**
>
> — Todd Krautkremer, senior VP, strategy & strategic partnerships, Cradlepoint

IDC expects mobile workers will account for nearly three quarters of the total U.S. workforce by the end of the forecast period.

Drivers behind the growth in the U.S. mobile worker population include the increasing affordability of smartphones and tablets as well as the growing acceptance of corporate "Bring Your Own Device" programs.

Also, a study by Stamford, Connecticut-based research firm Gartner Inc. predicts there will be around 8 billion "things" connected to the Internet by 2020, up from 6.4 billion things today. Those things can range from self-service kiosks to security systems to devices that monitor temperature.

"A sizable branch network today might be several thousand sites," Krautkremer said.

"In a few years there may still be 2,000 branches, but they may have tens of thousands of remote people and hundreds of thousands of things connected to their network. All of those endpoints will need to be secured, controlled and made compliant."

That promises to change the way networks are deployed and managed.

Ultimately, the solution to these issues involves a hybrid of software-defined and cloud-based networking that extends to both wired and wireless WANs. Instead of having servers, other storage devices and security applications located on site at edge locations, which can be expensive and prohibitive, spin them up via the Internet.

### Zero-touch deployment

Managing networks via the cloud eliminates the need for most site visits, allowing many tasks to be handled remotely from a central location. A number of network solution providers offer services that allow this to happen.

Cradlepoint's Enterprise Cloud Manager, for example, allows for zero-touch deployment and easy management of geographically distributed networks.

MAC addresses for Cradlepoint routers and IoT gateways can be pre-loaded into Enterprise Cloud Manager prior to deployment. Network administrators can see those devices, drag them into groups and set up the firmware and configuration for each of the groups.

Each device assumes the properties of that group—the same configuration, the same firmware—allowing for zero-touch deployment at each location. Staff simply needs to plug the device in and turn it on.

"To make deployment extremely easy, we've enabled Enterprise Cloud Manager to provide devices with a base configuration," said Alecia Hoobing, Cradlepoint's Senior Director of Research & Development for Software-as-a-Service.

In addition to managing the initial setup, Enterprise Cloud Manager enables IT staff to create multiple alerts, set the frequency at which they're sent out and choose the email addresses they are sent to. Managers can also set alerts for software upgrades, connection state or data cap thresholds.

## Benefits of a Software-defined, Cloud-delivered Network

**Zero-touch deployment**
- Configure devices by groups or individually.
- Update firmware easily with a few clicks.
- Spin up networks quickly and add or delete devices from a central location.

**Simplified management**
- Monitor device statuses in real time.
- Set proactive alerts for optimized LTE data usage and network uptime.
- Practice best-in-breed security applications.

**Instant insights**
- Always connected, real-time network analytics.
- Proactively manage data usage, performance and costs.

**Lower total cost of ownership**
- Perform remote diagnostics.
- Troubleshoot without on-site IT support.
- Monitor data usage, avoid overages.
- Reduce truck rolls, saving time and money.
- Prevent poor customer experiences and lost revenue caused by Internet downtime.

*Source: Cradlepoint*

"You can create an alert to let you know if someone has changed a configuration, or if there was a failed login attempt," Hoobing said. "You can find out right away if someone is trying to hack your network, or attempting to do a brute-force or Denial-of-Service kind of attack."

## The role of 4G LTE

Branch networks are typically connected with fixed wirelines and often leverage 4G LTE for fail over. With the rise in in enterprise workforce mobility and IoT, 4G LTE will comprise a significant number of endpoint connections – creating new network management challenges.

"If I have a wireline connection, I pay for that every month and it doesn't matter how much I use it, but 4G LTE is a measured service, so I want to be sure exactly how much of my data plan has been consumed at any point during the month," said Krautkremer.

For instance, if a company has a set monthly data plan and it runs out of capacity with a week still to go, they could end up with costly overage charges. In addition, if one employee is consuming more data than his or her colleagues, that may indicate a security breach or other inappropriate use of company resources.

Also, 4G LTE sends traffic over the public Internet, so companies will be faced with new security concerns. Imagine a mobile network that has 10,000 workers or things connected to it, and someone hacks a machine, accesses the wireless connection and starts streaming a bunch of things over that connection. How would you be able to pinpoint what location is using an excessive amount of data that's going to overrun your bill? Those are the kinds of new challenges that exist and need to be managed to scale.

In this new networking reality of people, places and things, networks have to scale to entirely new levels. Automation will be essential to be able to configure and operate them reliably without huge increases to its network staff. In addition, security will need to be more integral to the network itself, and not an add-on at the edge or endpoint.

**"In the future, there will be less and less need for more physical appliances and stacks of hardware at the WAN edge to be able to provide security, visibility and control functions. They can be simply added to the network via software in just a few clicks."**

— Todd Krautkremer, senior VP, strategy & strategic partnerships, Cradlepoint

These new challenges require a new way to build and manage the enterprise WAN. Cradlepoint recently introduced its Cradlepoint NetCloud, a new platform strategy that combines its existing software and cloud services with its recently acquired Software-Defined Networking (SDN) and Network Function Virtualization (NFV) technology. The Cradlepoint NetCloud platform allows companies to deploy private cloud-based networks over wired and wireless broadband for branch, mobile workforce, in-vehicle and IoT networks.

Cradlepoint NetCloud eliminates the need for costly hardware, allows IT staff to manage a much larger network than they could in the past and gives a company much greater insight into how its resources are being used. Network services such as content filtering, application control, micro-segmentation and analytics are now delivered as virtual network services that run within the cloud-networking platform itself.

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