



Why 5G is more than a **telecom revolution**

A 5G-enabled platform allows agencies to adopt new services and applications now and in the future

5G ARCHITECTURES AND TECHNOLOGIES can give agencies the capability to connect billions of devices and significantly speed the transfer of data at a time when rapid, secure access to data has become critical to mission success. From software-defined data centers through clouds and out to the network edge, 5G is enabling innovation at

an unprecedented pace.

Evolution to 5G brings new cloud-native, distributed edge architectures and delivery platforms for edge services. These new architectures and platforms have the potential to significantly improve service agility and time-to-market delivery, allowing agencies to create new services faster in response to customer needs.



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In addition, distributed edge architectures significantly reduce service latency and data backhaul by placing service functions and applications closer to the consumer and servicing data at the edge rather than backhauling it to core data centers for processing. Because cloud-native platforms are designed and built on a foundation of automation capabilities and tooling, administrators can expect to achieve greater efficiency when performing infrastructure, service and application life cycle management functions.

5G architectures and technologies are empowering a new world of innovative, real-time remote operations and control services. In addition, the ability to dynamically share spectrum in the Citizens Broadband Radio Service, which has been set aside for public wireless access, makes it possible for agencies to rapidly deploy private 5G networks in situations where flexibility and control are essential.

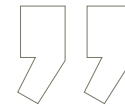
Maximizing the possibilities for innovation

Agencies need to generate, analyze and manage massive amounts of data to achieve success on a diverse set of mission goals. The increase in bandwidth that comes with 5G





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widens the data pipe between devices and platforms to give agencies a faster way to move data and therefore harvest even more valuable insights for decision-making.

5G is not just about increasing bandwidth. It is also about creating new applications and enabling new services that can help agencies maximize the value of digital transformation. That's because

5G is an enabler and catalyst for other crucial and transformative technologies, such as augmented reality, virtual reality, industrial automation, real-time sensor-based telemetry, drone control, artificial intelligence and automation.

Moreover, 5G can bring connectivity into difficult areas and give employees access to resources and data they did not previously

have. These new services will streamline government activities and provide new capabilities to enrich the user experience while allowing agencies to do more with less. And while 5G-enabled platforms are helping government agencies meet today's demands, those platforms are also paving the way for new cutting-edge solutions and use cases that haven't been created yet.

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5G's impact on the cybersecurity landscape

5G will raise new cybersecurity challenges and also enable new solutions. The number of connected devices and the amount of associated data being collected, consumed, analyzed and stored are growing exponentially as agencies add internet-of-things sensors and remote workers to their networks. Securing these expanding environments means securing service providers, agency users, applications, data stores, networks, data analysis platforms and devices of all kinds.

Endpoint security is a crucial component of those efforts, along with a zero trust security framework that enables agencies to continuously authenticate users and proactively monitor activities for signs of suspicious behavior or anomalies.

In addition, the multitude of new services that 5G makes possible come with a variety of service-level management requirements. Network slicing is one approach to accommodating differences in service-level agreements on a per-service basis. Network slicing involves logically segmenting services and the resources they consume based on a service profile and associated quality-of-service requirements. With network slicing, agencies can segment, aggregate, deliver and manage services based on service-level agreements and requirements.

Although unique and segmented, network slices run on shared infrastructure, which means administrators need to ensure they have strong security solutions in place for prevention and detection at both the infrastructure and application layers. As agencies and service providers move toward converged multi-cloud environments, the level of complexity involved in managing and securing 5G services across network slices and clouds increases significantly. Implementing a common infrastructure platform foundation across all clouds can dramatically reduce complexity by providing administrators with consistent security capabilities and operating models across all clouds.

The underlying architecture of any solution should include hardware

and software with industry-leading cybersecurity features provided by companies that pursue the best principles in supply chain security. Infrastructure platforms that give administrators the ability to define and set security policy and then inherit or federate that policy across multiple clouds can greatly improve the overall security posture, minimize opportunities for exploitation due to cross-platform inconsistencies, and increase service monitoring and management efficiency, whether for mission-critical 5G services or general data storage and analysis platforms.

Dell's Supply Chain Risk Management framework mirrors the comprehensive risk management framework in the National Infrastructure Protection Plan, which outlines how government and the private sector can work together to mitigate risks and meet security objectives.

Making strategic investments in 5G

Laying the right foundation is the most important strategic investment agencies can make in 5G. It involves designing scalable, distributed edge architectures; choosing the appropriate platform for cloud-native service delivery; implementing workflow

automation solutions and capabilities; adopting DevOps models; and most important, building and implementing strategies for securing and managing the delivery of 5G services. Ultimately, the goal is to implement a platform that is capable of supporting today's application and service delivery requirements while ensuring that the platform is built with enough flexibility to evolve and support the adoption of future use cases and services.

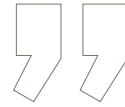
Success with 5G also involves working closely with industry partners. A rich partner ecosystem enables agencies to select best-in-breed products and technologies. It takes an ecosystem to meet the government's technology challenges, and agencies must be able to evaluate new technologies, receive input from a variety of sources along the way and manage those dialogs for the purpose of continuous improvement.

Disaggregation, platform composability and open integration are key investments that will generate strong returns for agencies looking to avoid vendor lock-in, make it easy to remove and replace applications, and avoid proprietary, dedicated hardware. An open, modular framework provides agencies with the highest level of architectural flexibility,





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which empowers rapid evolution to the next generation and beyond.

Along those lines, the industry's Open RAN initiative for 5G is changing how mobile networks (specifically radio access networks) are architected to enable interoperability. It also encourages competition and innovation while reducing risks and privacy concerns.

An ecosystem of partners working together

Ultimately, 5G supports a revolution that

goes far beyond telecommunications. At VMware and Dell Technologies, we believe 5G will deliver transformation across government and all sectors of society. That's why Dell is helping to define the underlying infrastructure technology in its role as a leader in digital transformation, and VMware is committed to developing the most agile, scalable and cost-effective platform for 5G service delivery. Dell and VMware are working with more than 300 partners globally to bring agencies cutting-edge solutions that solve real-world problems.

5G will continue to empower new innovation. Agencies, service providers and enterprises are working together with industry ecosystem partners to prove out new use cases and solutions at an amazing rate. Their combined efforts and investments will continue to accelerate digital transformation while enabling evolution to 5G and beyond. ■

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