OBSERVATIONS FROM GARTNER

THE INFRASTRUCTURE, OPERATIONS AND CLOUD STRATEGIES SUMMIT

DECEMBER 2020

GLOBAL TECHNOLOGY SOLUTIONS GROUP

GTSG LISTENS TO GARTNER

GTSG listens closely to what Gartner has to say. Why?

Our firm has over 100 excellent consultants, architects, technical subject matter experts and technical project managers deeply involved in mission critical client engagements over durations ranging from weeks to years.

By contrast, each Gartner analyst has perhaps 1,000 interactions with end user organizations per year. These interactions are then synthesized, with best practices (and emerging best practices) crystallized into research which represents the best thinking of a broad range of analysts over the full range of industry segments.

At GTSG, we regularly engage with dozens of these analysts. We benefit from their unparalleled insight; our clients benefit from both the broad market scan, and the security that comes from knowing that GTSG's methods are consistent with Gartner practices and solution paths.

TRACKS AND EMPHASIS

As with much of 2020, the Infrastructure, Operations and Cloud Strategies Summit was different. GTSG has worked this event since 2014, each time in Las Vegas. This virtual event was a first and was executed with typical Gartner excellence.

Remarkably, 125 sessions were available from a list of tracks including

Disruptive Technologies	Cloud Migration Strategies	Leadership in the Next Normal
Agile and DevOps	Edge and Distributed Cloud	Infrastructure and Cloud Security
Tomorrow's Infrastructure	IT Operations in a Hybrid World	Senior Leadership Circle

with several spotlight tracks, including Cost Optimization, Gartner for Technical Professionals (GTP), Midsize Enterprise (MSE) and The Work at Home Enterprise.

GTSG is Gartner-recognized for cloud strategy, workload migration, disaster recovery and mainframe expertise. Our summary is focused on our competencies.

As a provider of SLA-based/penalty-laden managed services, be assured we are closely attuned to the runtime/operational application of any of the guidance we hear.

TOP TRENDS IMPACTING INFRASTRUCTURE AND OPERATIONS

For context, the "Disruptive Technologies" track also included sessions on

- automation,
- containers,
- Kubernetes,
- microservices,
- operationalizing AI,
- the enhancement of Site Reliability Engineering (SRE) with Chaos Engineering,
- 5G Hype, Trends and Directions, and
- quantum supremacy and the quantum developer.

Now to the Trends:

Gartner assumes that by the end of 2023, more than 90% of I&O will have most of their staff working remotely. Not surprisingly, the percentage of **all** employees working remotely at least some of the time exploded from 30% to 76% during the pandemic. Post pandemic, this percentage is expected to level at 48%, a nearly 60% increase from the outset of 2020.

The top trends were six this year, and certainly informed by the “work from anywhere” future:

Anywhere Operations	Core Modernization
Optimal Infrastructure	Distributed Cloud
Operational Continuity	Critical Skills vs. Critical Roles

Anywhere Operations: planning must acknowledge impacts on staff and support, the end customer, and the network. Edge and cloud deployments are increasingly considerations. The inevitable challenges to traditional thinking and culture will be rewarded with more flexible and resilient organizations, and with broader talent choices.

GTSG believes that our long history with latency analysis will be of particular value in workload placement engagements.

Optimal Infrastructure: going forward, we need to think of I&O as “integration and operations.” Programmable infrastructure and platform ops were emphasized.

Operational Continuity is a given today, as workloads must support customers wherever they are. Analyst Jeff Hewitt used Microsoft’s underwater deployment to illustrate the lights out data center: automated deployment with zero or minimal touch maintenance.

Jeff also notes that while there is tremendous upside to the automation, the new tools and processes can be challenging to justify

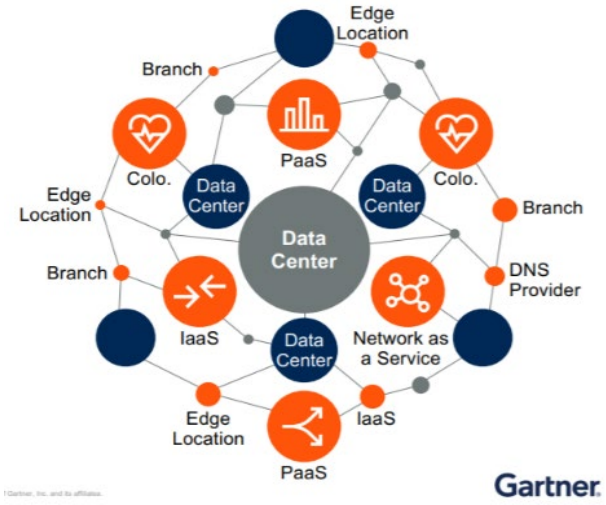
TOP TRENDS, CONTINUED

The chart to the right illustrates the greatly increased complexity in getting the right workload to the right place at the right time - as well as providing operational continuity.

Given the complexity, risk/ return ratios must be considered.

Gartner recognizes GTSG for

"Hybrid Cloud Workload Placement Strategy."



Here at GTSG, we talk continuously about the need for continuity requirements to be based on business priorities- everything starts with the Business Impact Analysis (BIA). For more, we've written a paper available here: *Rightsizing Disaster Recovery Under Financial Pressure*

Core Modernization: Jeff recalled a conversation among analysts speculating on whether a pandemic would bring the end of the mainframe. As a firm founded in the mainframe over three decades ago, GTSG feels obliged to note that the pandemic hasn't threatened the mainframe in the slightest.

Modernization, however, does continue. It should be considered a process, not a project. The effort required for culture change, funding and new processes can reward an organization with lower technical debt and a more agile infrastructure.

GTSG can help you to work with application leaders to identify where to make impact (the intersection of urgency and readiness) and can help you to develop and implement a modernization plan in manageable work efforts with realistic timelines. We have helped with everything from what one client described as a "Mainframe Decommissioning Study" to cost analysis for those who will rightsize the platform for the right workloads.

Distributed Cloud: can improve infrastructure performance at the locations most important to you and does offer the desirable "no touch" options mentioned above, albeit with the risk of lock-in and the high cost associated with an immature market.

Critical Skills vs Critical Roles: This change in focus can more effectively align spend with business needs. Jeff emphasized the inclusion of competencies as well as skills and noted that some organizations included "indistractability" among these traits.

THE FUTURE OF ENTERPRISE DATA CENTER IN A POST-COVID-19 WORLD

Conference co-chair David Cappuccio reminds us that whether we want them or not, on-prem data centers will be required for the foreseeable future. He emphasizes intelligence and automation, as there are simply not enough people to run the data centers we need without these enhancements to productivity.

It's 2020, so we are reminded to plan for nightmare scenarios, one of which Dave reports as actually having been experienced by one of his clients:

A partner installed updates in active/active data centers

...the partner later tested positive for COVID-19
...all staff at both sites entered quarantine
...and nobody was left to run things.

Impacts On-Premises:

Minimize movement, automate, minimize risk, maximize value.

Practical lessons learned by I&O include the need to

- optimize computing to be location agnostic
- focus on critical skills not critical roles
- focus on the value of back-office infrastructures
- shift from the focus (and measurement) of uptime to customer value
- accelerate I&O workforce modernization and automation

Dave said he'd heard the term "lights out data center" more in the past 6 months than in the past 20 years.

For the physical environment, we must focus on the processes for disease control and disinfection, and such enabling practices as contact tracing and restricting vendor access and implementing temperature check stations.

For staffing, reduce on-site people, implement simple, consistent temperature checks, consider extending shifts (perhaps 3days x 12 hours), and ensure masks at shift turnover and with training pairs.

And for facilities teams, prioritize facilities maintenance based on risk and impact; emphasize remote monitoring/management; review on-site food/water supplies and delivery, severely restrict vendor access, and review fuel supply or update contracts

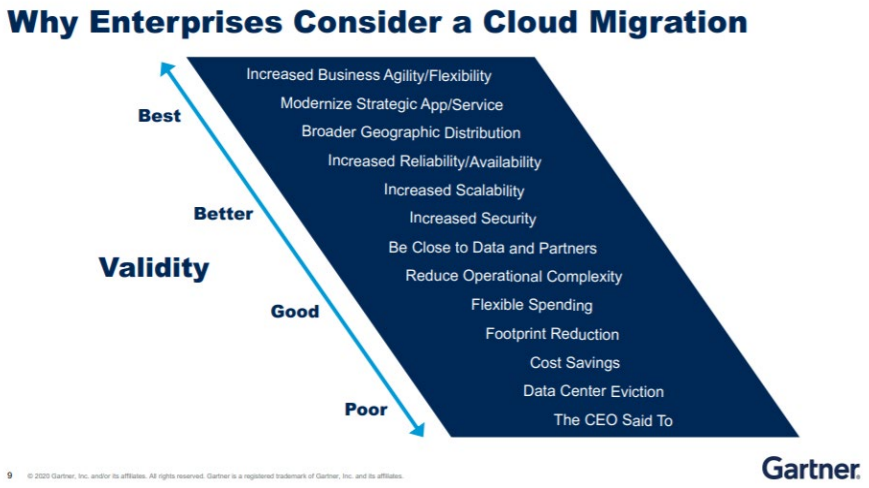
David also discusses the impacts on off-prem, including colocation, edge and distributed cloud, in equivalent detail. His take-away for off-premises compute: support becomes far more complex. Consider the cascade effects prior to deploying new infrastructure solutions

CLOUD MIGRATION STRATEGIES

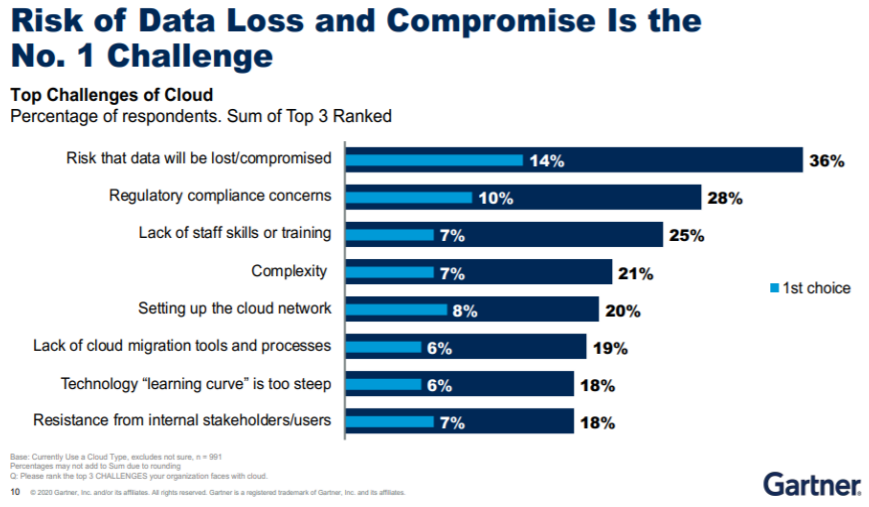
Raj Bala's Monday session *Building an Enterprise Cloud Strategy* is a GTSG favorite for its insightful focus on the fundamentals of running mission-critical workload.

Raj reminded us that 50% of the apps in cloud are mission critical: long gone are the days of dev/test only. Indeed, if mission critical applications are there, we need a solid plan; the enterprise cloud strategy is a direction to the "north star."

Each client environment is different; the path to adoption depends on a unique set of business objectives – starting with why we are going at all. Gartner has made these statements for several years, but this chart is the most succinct "reasons" chart that we've seen.



Then, Raj counseled us that "accepting risk is ok, ignoring it is tragic."



Lock-in is *not* on the list, because a critical mass of users has come to understand that lock-in happens not just in cloud, but everywhere in technology (e.g., Oracle ERP, SharePoint). Rather, they embrace lock-in, because they understand that if you're not locked in, you're probably not getting maximum value from integration.

ENHANCING DISASTER RECOVERY

Analyst Jerry Roseman opened a session entitled "Tips to Enhance Your IT Disaster Recovery Program" by "asking the real question:"

Are you really able to recover – not – "do you have an environment?"

Gartner's 2019 Security and Risk Management Survey tells us that

- 76% of respondents reported at least one incident requiring the activation of a DR plan
- 50% of respondents had two or more such incidents
- 33% had serious issues recovering
- Only 12% recovered with the right expectations.

Jerry grounded this session in practical reality with timeless themes updated for today's cloud capability. His main points:

Business alignment to IT DR is a challenge

- Analyze business functions: the business impact analysis is essential
- Plan for loss categories- internal infrastructure, regional issues, data corruption, security issue
- Standardize your criticality tiers, and share them with the business
- Standardize your recovery strategies

Missing details limit successful DR execution

- Ensure understanding of roles and responsibilities (a RACI or similar construct)
- Plan for unavailability of key members
- Enhance access control
- Detail procedures – one engagement our GTSG consultants performed involved a number of DR plans being rendered obsolete by numerous data center consolidations. The remediation required Application Recovery Designs, followed by detailed Application Recovery Procedures. Only then could this board-level audit exposure be closed.

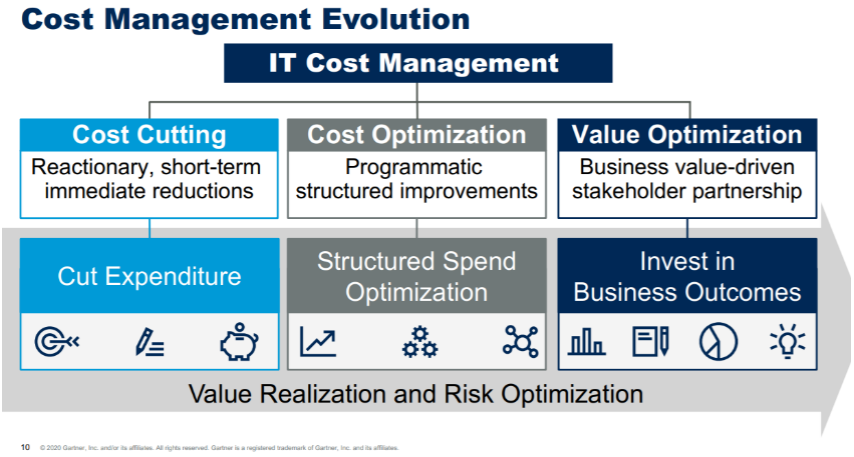
Limited exercising masks executive insight: we must exercise, not simply test, varying the scope and depth of the tests, with updates to processes and review of lessons learned.

- Finally, this is a multiyear effort, with a moving target based on changes both with workloads and with the available recovery technology.
- Planning for effective recovery is a passion at GTSG for which Gartner has recognized us, particularly in large enterprises with mainframes. Please reach out to Partners@GTSG.com to talk further.

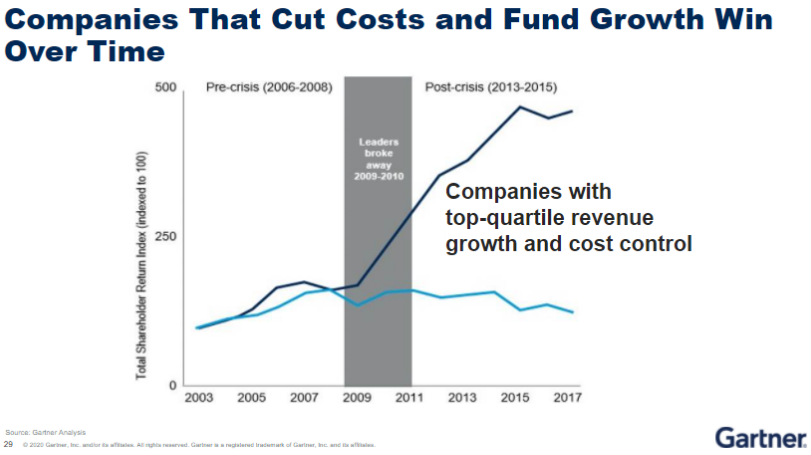
COST OPTIMIZATION

In 2020, cost optimization became front and center. Sessions included specific advice on unstructured data, backup and recovery, cloud infrastructure, aligning budgets to costs in the cloud, network budgets, data egress costs in the cloud, using the cloud to reduce DR costs, and JoAnn Rosenberger's session on financial models for maximizing negotiation leverage, worth the price of admission by itself.

Duncan Prosser led a session on "Cost Intelligence," the Gartner term for integrating cost optimization with investment, all focused on the leveraged alignment of I&O spend with the priorities of the business. Gartner of course advises reinvestment of dollars gained from the elimination of waste into innovation and growth.



Duncan reminds us of data encouraging the pattern of aggressive cost cutting to fund reinvestment. This pattern characterized those organizations emerging with top-quartile growth from the financial crisis which began in 2008.



ZEITGEIST 2021: WHAT YOUR COLLEAGUES ARE ASKING GARTNER ABOUT I&O

Notes from a well-organized window into the 400,000 interactions Gartner has each year.

Top Topics:

- **Cloud**
- **Data Center**
- **Networking**
- **DevOps**
- **Infrastructure Monitoring**
- **Backups**
- **ITSM (IT Service Management)**
- **SD-WAN**
- **Storage**
- **VDI (Virtual Desktop Infrastructure)**

Top Question Types:

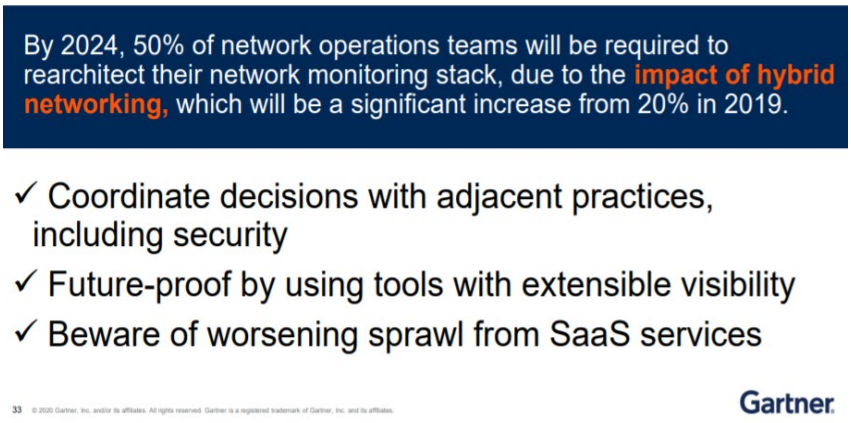
- **What's the right strategy for me?**
- **Can you review this proposal**
- **What tools/products should I use?**
- **Compare my maturity to others?**
- **What are the best practices for this?**
- **Explain this emerging technology?**
- **How do I plan for the future?**
- **What's the right org structure?**
- **How can I lower cost?**
- **What policies should I put in place?**

Trends: 2020 Versus 2019

And why are these topics trending?

- AWS, Azure IaaS + PaaS = CIPS
- DevSecOps Will be embedded in most rapid development
- Data Governance From technology-centric to product & people-centric
- DaaS Windows Virtual Desktop has injected fresh hype
- Dynatrace APM "Leader" branching into DEM, ITIM and AIOps

The number one *specific* question was "Can an analyst review my Cloud Strategy?"



CRISIS CULTURE HACKING

Conference Chair Katherine Lord spoke on "Crisis Culture Hacking — How to Keep Your Employees Sane Over the Long Haul." She opened by noting that moments of growth emanate from outside the comfort zone and that we are facing challenges on four fronts: health, the economy, social change, and climate change. While there is undoubtedly change fatigue, we can't put transformation on hold.

Katherine advises us to avoid the temptation to solve Big Problems with Big Solutions. Rather, we might rely on "Culture Hacks" which can be tested vs the criteria of "Alive"

Actionable; ***L***ow effort (not low courage); ***I***mmediate impact; Highly ***V***isible, and which elicit an ***E***motional response. These could be as simple as the change to a format of a meeting, or the change of metrics to move a team to a shared goal.

She also challenged us to keep the vision front and center- the north star – and to subject it to a five-part test. Can we answer

- what and why?
- in under two minutes
- without "corporate speak"
- in a fashion that is actionable by the front line, and
- in a peer tested fashion.

MIDSIZE ENTERPRISE

Longtime MidSize Enterprise (MSE) expert Mike Cisek ran a session called "Top Three Drivers and Deterrents of Cloud Adoption Among Midsize Enterprises." Mike opened, as he normally does, by framing the MSE (small budgets, versatilists vs specialists, and the lack of economy of scale), and what it wants from the cloud. He has a strategic planning assumption that 60% of MSE workloads will remain on premises through 2023, and explains why that may change (if an enterprise is forced to cloud by high support costs, or more optimistically, that the vendors will rightsize solutions for this market).

What drives MSEs to the cloud: the elimination of hardware, and the time spent on maintenance; disaster recovery, and gains in both business and IT operations. In the MSE, the CIO is the *de facto* transformation officer; it is the CIO's job to show the business what is possible.

What deters the MSE includes OpEx increases, as a majority of existing workloads are neither cloud native nor cloud ready (which would accelerate time to benefit). Mike concludes that "Cloud continues to represent untenable/ unpredictable OpEx cost outcomes compared to on-premises (SDx) investments over a typical 4- to 5-year life cycle." The costs and extra effort in security and training are also deterrents- not that the cloud is less secure, but that scarce internal MSE resource is required to make the cloud configuration secure and compliant.

If you're an MSE and could benefit from a conversation about why some of your workload might not fit the cloud, and how to explain that to senior leadership, please write Partners@GTSG.com and we'll share our experience.

AGILITY, DEVOPS, AND THE PRACTICAL CHALLENGE OF CLOUD EGRESS COST

David Wright reminded us that while 54% of businesses expect cost savings from the public cloud, that cloud can be up to 20% more expensive than existing operations. He continued with the now familiar tale of a cloud footprint that was consistently $20,000 per month "until it wasn't," and was then $160,000. Worse still, the organization couldn't get under the costs to see what had gone awry.

David presented an analogous situation where the Data Transfer Out (DTO) costs were over 400 times the cost of the storage bucket, and emphasizes that whenever you deploy a system in the cloud that,

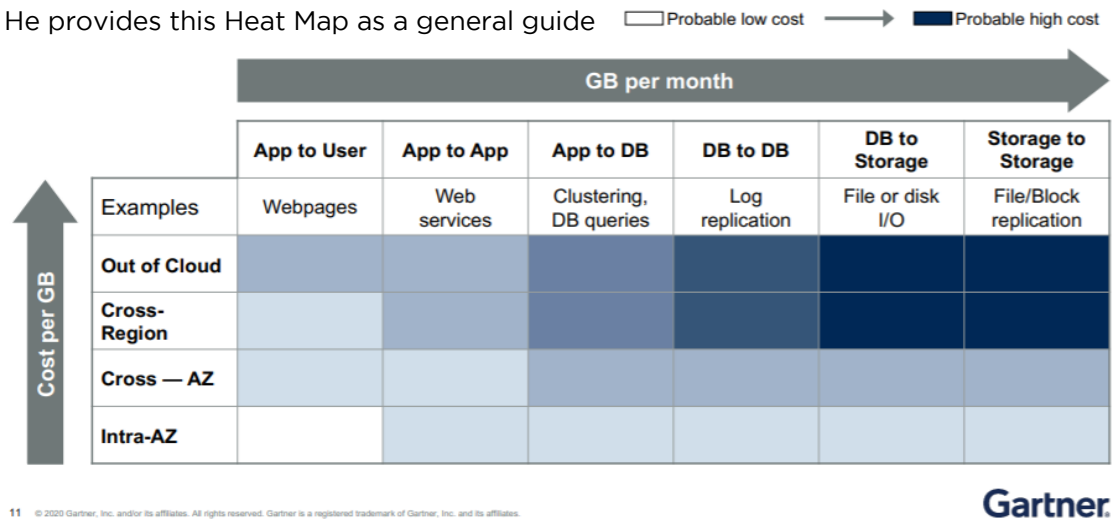
- routes data out of the cloud,
- writes data to storage outside the cloud, or
- moves data between cloud regions,

you are likely to incur Data Transfer Out charges.

To find these costs, we need to filter for them. Examples of costly behaviors include,

- Applications in the cloud doing low-level database, file or block writes to storage locations outside the cloud
- Large-scale file, block or bucket replication between cloud regions
- Web servers in the cloud serving media (video, audio) to public users without using a CDN
- Continuous backup of large cloud datasets to archive storage at a partner or vendor's site

He provides this Heat Map as a general guide

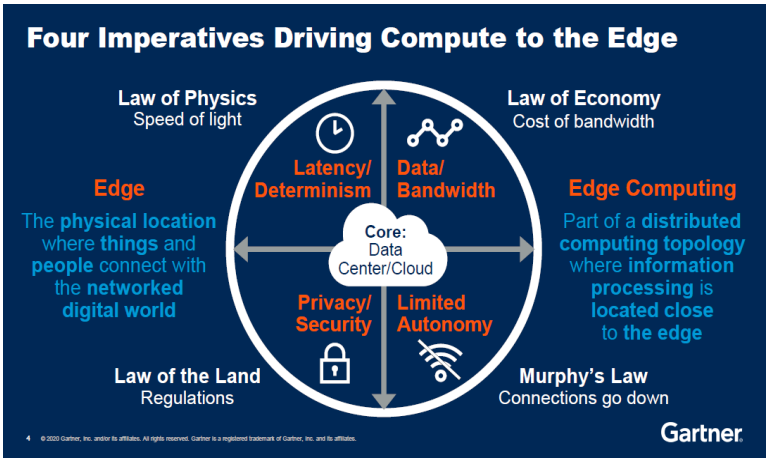


David encourages us to measure, to aim to contain rather than to eliminate – focus on large concentrations of DTO – and to remember that not all data egress charges are bad, that it is a natural byproduct of cloud operations and should be evaluated on a cost-benefit basis.

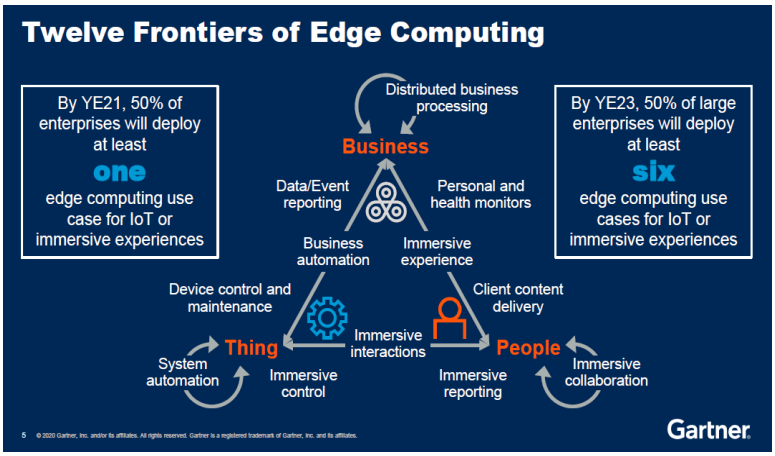
EDGE AND DISTRIBUTED COMPUTING

An agenda search for "edge" provides 17 sessions, signaling the prominence of this topic. We can't do it justice in this summary, but the session titles indicate the breadth of coverage:

- The Strategic Roadmap for Edge Computing
- Cloud Providers Extending to the Edge
- Software Platforms for Edge Computing
- The Cloud Computing Scenario: The Future Is Distributed Cloud
- Building an Enterprise Edge Strategy for Data
- The Impact of Tethered Cloud (e.g. AWS Outposts, Microsoft Azure Stack Hub) on Your Infrastructure,
- From Cloud to Edge, or From Edge to Cloud — this session asks whether the extension of the hyperscaler services to the edge is the optimal model for cloud and edge integration in the long run, and
- Edge Computing in Action, a deep dive into use cases for edge computing which contained two foundational charts.



The first explains what is driving workload to the edge – these "four laws" were presented by Bob Gill and by Tom Bittman in their sessions, both longtime analysts of edge computing.



The second summarizes the cross-industry use cases which will drive deployment over the next three years.

Far too much to cover in this short summary; please write Partners@GTSG.com to discuss further.

Thanks for reading through our summary. At GTSG, we make it our business to understand what Gartner is saying about the important challenges confronting our clients.

If you'd like to discuss any of these topics further, please reach out to PARTNERS@GTSG.com.

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HYBRID CLOUD STRATEGY AND MIGRATION

Strategic Approach

- Business case development
- Transition planning
- Technical modeling
- Non-disruptive execution

Application Analysis Methodology and Tools

- Decomposition
- Affinities
- Wave planning

Project Leadership

Implementation Subject Matter Expertise

INFRASTRUCTURE SUPPORT SERVICES

Managed Services

- Multi-platform including DB & MW
- Service-level based or FTE-based
- Architecture, administration, programming, systems management
- Remote or Onsite

Project Based Services

- Platform upgrades
- Workload migrations
- Implementation services
- Consulting and Assessment (performance, DR, HA....)
- Project Management

INFRASTRUCTURE TRANSFORMATION

Transition Services

- Insourcing/Outsourcing
- Knowledge transfer and interim support
- Application migration
- Service management design

Disaster Recovery Design and Implementation

High Availability Design and Implementation

Application Assessment and Deployment

- Reference Architecture
- Infrastructure Alternatives/ Recommendations
- Implementation/Migration

INFRASTRUCTURE OPTIMIZATION

Architecture Assessment and Design

Server Virtualization/Consolidation

Storage Optimization

Data life-cycle management

- Tiering
- Standardization/Automation

Application Decomposition Application

Re-design/Remediation Performance

Management and Tuning Latency

Analysis and Consulting