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COVID-19 Update

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COVID-19 presents operators and owners of mission-critical facilities and digital infrastructure with wide-ranging and often unforeseen challenges. This bulletin is intended to identify issues and new developments, offer insights and support, and point to further resources.

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Leadership

Data center professionals are some of the best-prepared leaders for dealing with extreme risk and unprecedented change. Managers have a high-reliability mindset, are process and procedures-driven, and have rich and varied areas of expertise. Even so, COVID-19 is placing a strain on all leaders and managers.

During this crisis, Uptime Institute offers some advice for leaders, based on recent consultations and member meetings:

- 1. People first.** Highlight the criticality of staff well-being – both physically and mentally – and follow through with recommended measures.
- 2. Share credible information.** Information reduces stress and diminishes fear caused by the unknown. Regularly share your organization's evolving plans. For external information, only use government and other trusted sources (not social media or news outlets).
- 3. Don't neglect personal needs.** Senior managers must be ready and available when needed. Take private, short breaks, avoid negative mindsets and be assertive in protecting your time and priorities.

These steps will enable senior managers to lead more effectively and calmly – and to be more present and available for staff.

Critical industry exemptions

Throughout much of the world, restrictions on movement and behavior are in place, some confining citizens to their homes. Certain operators have expressed concerns that their staff will not be allowed to travel to work.

Most governments maintain lists of critical occupations and industries that are exempt from restrictions. Data center facilities are very often not on the list.

In March 2020, the US government moved to clarify this. The CISA (Cybersecurity and Infrastructure Security Agency) designated the IT and data center sector as critical and exempt from COVID-related restrictions, such as shelter-in-place. The exemptions specifically cover most key engineering, operations and IT operational roles. Full details can be found [here](#).

The UK government's Cabinet Office and the Department for Education has also now designated the data infrastructure sector as

critical, and staff are exempt from restrictions. Details are available [here](#). The UK trade body TechUK is lobbying to have contractors, such as cleaning and maintenance teams, specially added.

Other governments have also declared the IT and digital infrastructure sectors as essential and have exempt data center and telecom infrastructure staff from restrictions. Elsewhere, staff are traveling to and from work under vaguer guidelines; some governments have not classified data center/digital infrastructure/IT/telecom professionals or industries as exempt but have granted permission to those performing important or essential work. And, at the time of publication, some countries are yet to impose any work restrictions. Examples of each are shown in Table 1.

Table 1. Exemption status of data center, telecom, digital infrastructure and IT staff from work-commute restrictions during the COVID-19 pandemic*

| Specifically exempt | | Not specifically exempt but can commute under less-specific guidelines | Government has yet to impose work-commute restrictions |
|---------------------------------|----------------|--|--|
| Belgium | New Zealand | China | Estonia |
| France | Portugal | Denmark | Finland |
| Germany | Saudi Arabia | Japan | Latvia |
| India | South Africa | Korea | Lithuania |
| Ireland | Spain | Philippines | Norway |
| Italy | Switzerland | Poland | Romania |
| Luxembourg | United Kingdom | Spain | Sweden |
| Netherlands | United States | Taiwan | |
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* Examples only, not a comprehensive list. Accurate at the time of publication; there are regional differences within some countries.

Source: Uptime Institute and government websites, March 27, 2020.

Uptime Institute's globally dispersed staff report no instances of (healthy, nonexposed) data center staff being restricted from commuting to sites in any country.

ACTIONS

- Contact local authorities to confirm exemption status, and lobby for this if it is not already explicit.
 - Ensure site staff are prepared with documentation of their employment and, if appropriate, the organization's COVID-19 response plan.
- Construction projects are considered exempt in some countries or states. In others, the rules are open to interpretation. Seek clarification
- Evaluate projects that could impact data center operational stability. Defer if possible.

For more, download our report **COVID-19: Minimizing critical facility risk**.

Safety and access

Operators are concerned with minimizing the risk of infection at their site by reducing site access and isolating workers.

Equinix, for example, is not permitting visitors, customers, customers' contractors or noncritical Equinix vendors into its IBX colocation facilities in France, Germany, Italy and Spain. For its IBX data centers in all other regions, except in the Asia-Pacific region, entry will be allowed by appointment only.

Others, such as Digital Realty, are permitting site access but only for customers, partners and employees who have not traveled to regions affected by COVID-19 in the past 14 days and are symptom-free. This, of course, can happen at a regional level: Although China is beginning to normalize, visitors and returnees from outside the country must quarantine for 14 days.

Many colocation firms are promoting their remote hand services, which can cover technician tasks, including IT equipment moves, adds, changes and maintenance; troubleshooting, including power cycling and issues with IT, routers, firewalls and other devices; and handling shipping and receiving on their customers' behalf. Some are offering reduced rates on these services. Online data center infrastructure management (DCIM) customer portals are also proving useful, including remote monitoring and IT support ticketing (linked to remote hands functionality).

The already challenging scarcity of operational staff is set to worsen. More than 60% of respondents to our 2019 Data Center Survey reported having trouble finding or retaining staff; shortages range from networking experts to mechanical and electrical engineers. Illness and quarantine measures will exacerbate the problem. Automation of routine tasks should be explored, but short-term solutions may not be possible.

Many operators have told Uptime Institute that they don't plan to take risks with the unavailability or illness of key staff. Separation of staff in discrete (e.g., blue/red) teams is common, to avoid cross-infection. Although a last resort, some are housing staff on-site or at nearby hotels. In one case, staff members' families are being offered on-site accommodation as well.

ACTIONS

- Restrict all unnecessary access to facilities, including visitors, customers and nonessential maintenance.
- Where possible, procure an appropriate supply level of products that reduce the spread of infectious agents.
- Place alternative staffing vendors on standby.
- Ensure standard operating procedures and emergency operating procedures are accurate and could be followed by staff unfamiliar with the facility.

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Supply chain under pressure

The digital infrastructure supply chain is global and interconnected; it can take just one component shortage in one region to disrupt the global delivery of a product. Supply chain issues have been sporadically arising, but to date the majority have been overcome.

The mandated shutdown of factories across most provinces in China earlier this year resulted in shortages of server and certain IT components. There are now signs of recovery in the Chinese manufacturing sector — however, the full impacts of the virus in Europe, the US and elsewhere have yet to be felt.

The primary weakness in the supply chain has been people, with factory closures reducing availability. Much IT component manufacturing remains labor-intensive. Components made in China or other areas impacted may be less available for many months. Note that several major manufacturing plants for heating, ventilation and air-conditioning equipment are located in Italy, which is severely affected by COVID-19.

Large suppliers of data center electrical or cooling equipment, such as Schneider Electric and Vertiv, have assured customers they can manage inventories and use air freight to supply critical equipment if there is a problem. But Schneider expects a \$300M hit on its first quarter 2020 as a result of Chinese supply chain disruption. Vertiv, which is smaller and more focused on the data center sector, has spoken of a \$70M to \$90M impact on profits.

All operators should anticipate supply chain disruptions and consider the potential for long-term shortages of critical spares and consumables. Those with standardized supply chains, with uniform build processes using pre-fabricated components, and with supplier contracts already in place will be best positioned to withstand temporary disruptions.

Insights, information or experiences to share? Do you need advice or support? Contact info@uptimeinstitute.com.

ACTIONS

- Anticipate and prepare for supply-chain disruptions. Order more inventory and discuss projected lead times with vendors and suppliers.
- Develop plans to deal with the possibility of a major equipment failure when you may not have access to key resources.
- Prepare for the possibility of fuel supply disruptions, especially in areas susceptible to regular power outages or situations in which the data center operator does not have a priority delivery contract in place.

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Traffic and workloads

COVID-19 has severely disrupted the way people work and behave. As a result, digital workloads, traffic volumes and traffic patterns have also changed, with internet traffic up across the world. So far, disruption has been minimal.

The core of the internet, of course, was designed to be resilient and to support shifting traffic patterns. The pressure has moved to particular sites and the edge. COVID-19 restrictions caused traffic to move from corporate and university networks to residential broadband, and from city centers to suburbs.

The networks of major cloud providers AWS, Microsoft Azure and Google Cloud have had almost no COVID-19-related impacts, according to networking monitoring firm ThousandEyes. However, its tracking service does show a rise in network outages generally through February and March 2020.

Network services vendor Cloudflare reports that traffic at busy internet exchange points — physical locations where internet service and content providers exchange data directly, such as in Amsterdam, London and Frankfurt — has increased up to 20% since March 9, 2020, without issues. The same goes for Italy and China (among the worst-affected COVID-19 regions), where daily internet traffic is up as much as 40%, as well as across Europe, where major telecom provider Vodafone reported a 50% increase in internet usage (see Table 2). As a precautionary measure, Amazon Prime Video, Netflix and YouTube (Google) have reduced their video-streaming bitrate across Europe (following a request by the European Commission). Similarly, Akamai, the content delivery network giant, is working with major online gaming platforms to shift downloads to nonpeak business hours.

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Table 2. **Effect of COVID-19 restrictions on network traffic***

| | |
|---|---|
| Traffic volume | Up ~20% since January 1 (US example) |
| Wired traffic | Up ~25% month-on-month (US example) |
| Latency | US, France, UK, Germany – Minimal impact China, Malaysia, Italy, Sweden, Iran – Significant slowdown |
| Mobile hand-offs | Down sharply |
| Peak hour for traffic | Shift from evening to daytime |
| Traffic areas | Shift from city centers to suburbs |
| Voice traffic | Up by as much as 50% |
| Collaboration tools, virtual private networks | Up ~50% |

* Examples only, not a comprehensive list. Accurate at the time of publication; there are regional differences within some countries.

Source: Internet traffic monitoring companies; industry media.

The large cloud providers have not reported COVID-19 related issues; however, in Europe, many clients have reported that Microsoft Azure has run out of capacity. It is currently unclear if this can be attributed to COVID-19.

Uptime Institute's public outage reporting service does not currently show an unexpected rise in outages.

In theory, a shift in patterns should lead to greater power use in some racks in a data center and perhaps less use in other areas, where the IT use has fallen. However, we have not received reports of this to date.

Separately, some colocation companies have reported a rise in requests for disaster recovery capacity, sometimes at a third site.

ACTIONS

- Understand the network paths of your mission-critical IT applications and workloads.
- Monitor IT power use, in order to anticipate surges in power demand.

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Data center demand

There are conflicting forecasts about the effect of COVID-19 on the overall demand for IT and digital infrastructure. Over the past 25 years, the commercial data center sector has largely proved resistant to economic recessions.

There is no evidence of correlation between data center leasing or building activity and gross domestic product growth or "negative growth." Indeed, many are speculating that demand drivers for data centers remain strong, with the pandemic accelerating the digitization of

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societal and business functions (online work, retail and social activities, entertainment, etc.).

Combined with the relatively low labor requirements for data centers, many investors are viewing the digital infrastructure sector — including commercial data centers and telecommunications and networking infrastructure (notably 5G) — as favorable. Even so, the valuation of publicly listed data center stocks has fallen dramatically in 2020.

There clearly will be broad economic contraction in key data center markets, such as the US and Western Europe; it is too soon to know what effects this will have on digital infrastructure demand. On March 12, market research firm IDC cut its forecast for year-over-year growth for IT spending in 2020 from 5% in January to just 1% (a “pessimistic,” rather than “worse-case” scenario), warning that it may be further reduced as COVID-19 spreads.

Many organizations are likely to delay decisions about their IT capacity requirements as they wait for the broader economic impact of the pandemic to play out, which could lead to potentially lower colocation leasing levels in the short term. The impact of COVID-19 related business uncertainty on cloud operators is less clear — many clients may reduce their overall cloud capacity in line with lower business activity. As other organizations reassess their IT environments and capacity, they may move more workloads to the cloud in the short term.

According to media reports in Taiwan, original design manufacturers expect data center server shipments to pick up in the second quarter of 2020 and continue to grow (they quote unnamed sources from the upstream supply chain.) Samsung, for example, expects demand for its data center and networking components to steadily rise, despite the pandemic. There have been reports of US customers ordering larger-than-average shipments of servers, but this is likely an overreaction (stocking up due to concerns of shortages).

ACTIONS

- Owner/operators should re-evaluate capital-expenditure infrastructure projects until demand patterns stabilize — after the peak of the pandemic, if practicable.
- Operators should consider investing in greater edge capacity to prepare for future events.

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Events and education

All face-to-face industry events through June 2020 have been cancelled. Some are being converted to virtual events. For example:

- DatacenterDynamics (DCD) postponed DCD-New York to September 2020. In the interim, it is holding a virtual event starting March 31, 2020. Its Energy Smart event will also be held online, in late April 2020.
- DCD-San Francisco has been postponed to October 2020.
- Broadgroup's Datacloud Global Congress in Monaco has been moved to December 2020.

Uptime Institute's regional events across the world are currently postponed, but members can attend more virtual roundtables and webinars — see [Inside Track](#) for details.

Most of Uptime Institute's onsite training courses can be delivered remotely for private clients. [Contact Uptime Institute](#) for details.

Some permanent changes may follow. O'Reilly Media, for example, has permanently withdrawn from staging live events; its Infrastructure & Ops Conference, along with other events, will now be offered online only.

ACTIONS

- The data center skills shortage means that continuing education and training will be more important in the future. Work with trusted partners to develop protocols for in-person and remote training. Content is more important than the delivery mechanism.
- Use trusted sources to keep abreast of changing regulations, technologies and practices. COVID-19 will lead to many changes.

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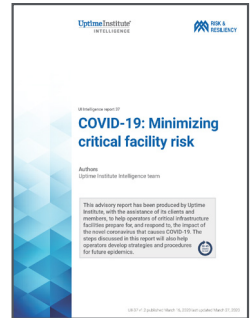
Uptime Institute COVID-19 resources

Uptime Institute has a rapidly growing library of resources focusing on COVID-19 and critical infrastructure:

Advisory report

[COVID-19: Minimizing critical facility risk](#)

This report details the strategies and measures that operators and managers can take to minimize the spread of COVID-19.



Webinar

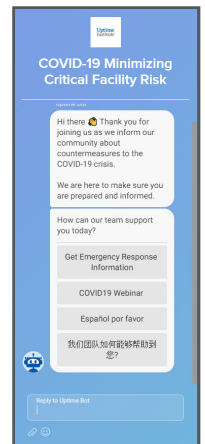
[COVID-19: Minimizing critical facility risk](#)

This webinar discusses the status of the data center industry's response effective mid-March 2020 and provides detailed recommendations and possible next steps.

Live support

[On-demand emergency management resources](#)

Our interactive site allows operators and managers to request advice on COVID-related questions in real time.



Additional resources coming soon:

- COVID-19 Critical response worksheet
- COVID-19 Flash survey results
- COVID-19 Advisory report update

Uptime Institute members will find a comprehensive collection of resources and discussions on [Inside Track](#). For questions about membership, contact [Uptime Institute member services](#).

Regional support

For regional information, advice and support, contact:

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