

# THE CIRCULARS 2019

## YOUR SMART DEVICES ARE USING TOO MUCH WATER – HERE'S WHAT DATA CENTERS CAN DO ABOUT IT

My family and I recently holidayed in our favorite hiking destination in the Southeastern United States – the Smoky Mountains. As we were packing our luggage for the trip, I noticed an extra bag of “necessities” I hadn’t noticed on previous trips – the myriad of chargers we needed for our assortment of electronic equipment we were bringing with us. Despite the premise of the trip being to disconnect and enjoy nature, I found it ironic that none of us could imagine even a short vacation devoid of some connection to the digital world.

If you look around your own home, there’s a high chance you’ll see the same proliferation of connected devices. Not so long ago, your household might have owned one computer and a couple of smartphones. Today, it’s likely that every member of your family owns a smartphone, in addition to tablets, e-readers, video streaming devices, and maybe even a connected thermostat or home security system.

You’re not alone. According to Cisco’s **Virtual Networking Index Forecast**, the average number of connected devices per household will increase by 50% by 2021, average network speeds will double and the average amount of data traffic will almost triple. As convenient as these connected gadgets may be, all those bits and bytes circulating through the Cloud pose a significant sustainability challenge.

Why? Because we’ll have to build thousands of new data centers to manage all the bits and bytes zipping around the internet. Simply put, a data center is a building full of servers that crunch the massive amounts of data all of us use in our personal and professional lives. Those servers produce heat, so they must be cooled. This takes extensive amounts of both water and energy, while simultaneously producing greenhouse gas emissions.

Latency issues, i.e. the time it takes for data to appear on everybody’s devices, means those new data centers will have to be built close to end-users, and many of them will need to be in water-scarce regions. This poses a significant challenge, because these centers will then compete for scarce water with the surrounding communities, agriculture and local business.

As the number of data centers grow around the world, their water usage can’t be based on a “flush-and-forget” model. The old linear model of water use – use once and dispose – puts too much stress on natural resources. At the current rate, the world will face a 40% shortfall in fresh water by 2030. In short, this shortfall requires the economy to reconsider the way water is used across all human activity.





This reconsideration of water use poses a large opportunity for data centers. As a relatively new industry in the middle of a big expansion, data centers now have a unique chance to get water right and pave the way to more sustainable usage across the globe. Data centers must lead the way in creating circular solutions now, to start reusing and recycling water. The good news is that the technology to do that exists today.

Take, for instance, a Microsoft data center in San Antonio, Texas, which had to deal with frequent droughts interspersed with flooding in the local Leon Creek watershed. That was a problem for steady operations, and the last thing a data center wants is outages, because when a data center goes down, internet services go down.

That's why Microsoft worked with Ecolab to install smart water meters that monitor and adjust water flow and quality in real-time. We've installed the technology, called 3D TRASAR, at tens of thousands of industrial installations, including steel mills, paper mills, car plants and cooling towers for large institutional buildings. These installations have resulted in a saving of hundreds of billions of gallons of water over the past few decades.

It speaks for itself that the smart water meters are also suitable for data centers. In this case, they enable the facility to start using recycled water for cooling instead of potable water from the municipal grid.

As a result, a data center can avoid using 60,000 gallons of water per year. That water is given back to the surrounding community, so both the facility and the community are more resilient to droughts and other water issues in the region. As a bonus, the data center uses less energy, which leads to lower greenhouse gas emissions and lower overall operating cost.

If we can implement these solutions around the world, the Cloud will be able to keep growing along with people's rising appetites for data, while minimizing undue added stress on the environment. And vacationing families will be able to bring all the devices they need in the knowledge that water-savvy data centers will keep them humming happily.

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