

A photograph of three people in a data center. A man with glasses and a beard is pointing at a tablet held by another man. A woman is looking on. They are all wearing blue lanyards. The background shows server racks with blue lighting.

# EDUCATING TOMORROW'S DATA CENTER OPERATORS

Solving the data center talent crisis through training at the college level.

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# WHY ISN'T DATA CENTER CURRICULUM TAUGHT AT MORE COLLEGES?

The data center industry should address the talent shortage proactively by developing curriculum for community colleges and trade schools

The data center industry is facing an existential crisis. Massive cloud adoption, cloud computing, online services, and an explosion in data consumption in general is fueling [11% year-on-year](#) industry growth. To keep up with that growth, we need trained data center professionals.

But data center professionals are in low supply, as a greater number of professionals are retiring from the industry than are joining it. For years, data center operators have relied on recruiting highly talented nuclear engineers and technicians from the military, specialists from mechanical and electrical trades – especially those with engineering backgrounds – and industry veterans from other companies.

Yet, industry wide, these approaches are proving to be mere band-aids for a larger problem. They don't address our general lack of a systematic way to recruit and train data center professionals, and now there's simply not enough talent to go around. And like most skill-heavy businesses, the data center industry is in desperate need of an infusion of new and diverse talent – the likes of which can only really be acquired by creating and promoting a new career path in our colleges and trade schools.

## BREAKING THE LAWS OF SUPPLY AND DEMAND

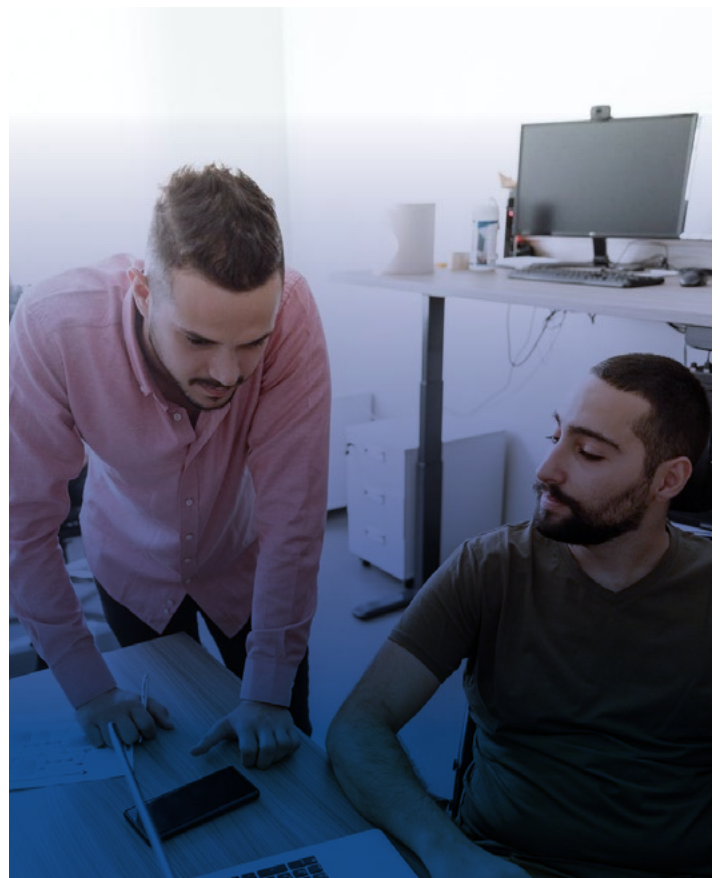
The data center industry as a whole is facing a unique, but growing challenge. More than [60% of data centers](#) already have significant difficulty retaining or recruiting staff, and new data centers are coming online and existing ones are growing at a faster rate than we can find people to work in them.

The reasons for this growing chasm aren't a mystery. Primarily, most people don't really know what a data center is or does. They see enormous, concrete square buildings off the side of the highway or on a large parcel of land that seem more like eyesores and wastes of good land rather than engines of commerce and the heart of business in the Digital Age. They appreciate the tax revenues data centers pump into their communities, but strongly dislike the boring aesthetics of the buildings and their undeniable environmental impacts.

Few industry outsiders know what activities occur in these facilities or the types of jobs available to support them. High school students and recent graduates mapping out their potential career paths decide they want to go into law, medicine, or business. Others are interested in and happier pursuing skilled labor opportunities in design and construction or myriad other potential career options.

None choose data centers, and it's largely our own fault.

Collectively, data centers have historically been tightlipped about how they work and who they work with. We try to protect what we see as our "secret sauce" at the expense of being transparent enough that people outside our business might someday decide to join us, help us grow, and catalyze the evolution of our industry.



## HIGHER EDUCATION: THE KEY TO ADDRESSING THE GROWING TALENT GAP

For virtually every other career opportunity one can think of, there's a requisite education curriculum to go with it. Even for mid-career changes, there are educational opportunities that allow people working in one industry to gain the skills, knowledge, and credentials they need to find a new role in a new industry.

That's just not the case for data centers, despite the fact that entry-level data center technician roles feature higher-than-average salaries, up to or greater than \$80,000 per year in some markets. Those markets — regions like Northern Virginia, Chicago, Denver, Silicon Valley, and others — are hotbeds of data center development and growth. Northern Virginia alone has tens of thousands of data center facilities in its regional footprint, with more on the way.

These locations are also heavily populated by higher-education institutions, public and private, that offer up a solution to the industry's growing talent shortage so obvious, it's almost impossible to explain how or why we haven't done anything about it yet.

**The logical conclusion to collectively solving our talent shortage is to create a purpose-built education curriculum offered in a variety of higher-education environments that widens the reach of our recruiting efforts and, in the long-term, will create a sustainable pipeline of qualified talent to support our industry's continued growth.**

We must recognize that not everyone is cut out for military service to gain the hands-on engineering experience we often seek in data center technician candidates. And many students — especially those from lower income households or with other family obligations — might not have the means, the time, or the ability to enroll in a costly four-year degree program to put them in a position to even consider working in a data center.

Building data center education into community college and trade school curricula is an ideal way to reach a wider audience of students that, ultimately, serves to not only fill the increasing number of job openings in our facilities, but also to support our industry's ongoing efforts for greater diversity and inclusion. It enables greater access to essential job training that's valuable and beneficial to everyone — students, their families, our businesses, and the local communities we serve.

It may not be as quick as the band-aid options, but data center-focused education is the most efficient, cost-effective, and sustainable path for solving our growing talent shortage thoroughly and permanently.

## SELLING THE DATA CENTER CURRICULUM IS STILL AN UPHILL BATTLE

Despite its obvious benefits, selling the idea of a data center curriculum in higher education isn't a slam dunk.

Colleges (and especially universities) don't want to invest their limited resources and space into a course that no one will know about or few will attend. There's also a shortage of qualified teachers because, frankly, working in the data center is far more lucrative than teaching others about working in them.

Fortunately, building the curriculum itself isn't as onerous or expensive as building a full degree program and there's a ton of high-value, deep industry expertise from eager industry veterans that programs can tap into if they know where to look and how to ask. Schools can work with government agencies, local businesses, and nonprofits to procure the space and equipment required for creating a hands-on lab. And the industry itself could fund scholarships, grants, or other awards to help bring the total cost of this education track to a mere fraction of the cost of a full degree.

The data center industry as a whole is at a crossroads. There's more demand for our services, more facilities coming online at a faster rate than ever, and fewer qualified people to work in them. It's long past time that we introduce data center curriculum into post-secondary education programs to offer students a whole new career path they never knew existed and create a wide and deep curated pool of talent that will prevent us from exhausting all of our hiring options before it's too late.

# SOLVING THE DATA CENTER TALENT CRISIS: DATA CENTER OPERATIONS AS A COLLEGE COURSE

Making the case for data center operations as a college-level study program and steps for making it a reality

Recently, I wrote about introducing data center education to community colleges and trade schools as a great way to solve our industry's growing talent gap. Over the years a combination of narrowly focused recruiting efforts, poor transparency across the industry, and even worse promotion of how great it can be to work in data centers has led us to a place where there simply aren't enough qualified employees to go around.

Incorporating a data center education into college curriculum is a cost-effective option for closing the talent gap because instead of relying on third party partners, upskilling existing workers, or poaching employees from direct competitors, we'll be able to grow new workers who are ready for a career as data center professionals.

But like all good and worthy ideas, implementing this one isn't without its challenges. So, let's take a look at what needs to happen in order to start making it a reality.

## MEET THE PEOPLE WHERE THEY LIVE

Like residential real estate, data centers are all about location, location, location. The buildings are generally located close to internet exchanges in network-dense areas, but also happen to be heavily populated by businesses.

It also means that those areas tend to be more densely populated with people who don't already work in or for a data center and represent an untapped market of potential employees, provided we can create opportunities for them to develop the skills and knowledge required to obtain a job in one.

The good news is that the geographic targets for building data center education programs are somewhat limited. Northern Virginia, for example, is the center of the data center universe, with more facilities than anywhere else in the country, if not the world. It makes more sense to focus time and attention on incorporating education programs here or in other areas like Silicon Valley, Chicago, Portland,

and Denver which are rapidly becoming data center hubs, than it does in places like Nebraska, Kansas, or the Dakotas.

Still, we have to be strategic about our outreach efforts and communication with these communities to get them interested and excited about this kind of career. These areas are often more diverse in ethnicity and socioeconomic background, in which not everyone has the same resources or opportunities for conventional education programs.

That means we'll need to develop a communications program aimed at local high schools and private STEM programs to help administrators incorporate messaging about an exciting new career option into their career counseling services and help students better visualize what a future in as a data center employee could entail.

## KEY STEPS TO CREATING AND SUSTAINING A PROGRAM

Beyond merely creating a market for data center programs within community colleges and trade schools, there are also practical factors for building and sustaining a data center operations program to take into account.

### Building suitable data center lab environments

Data centers are marvels of electrical and mechanical engineering, which require extensive training and hands-on experience. So, it's essential to get students working in a real-life environment during their training which will require building and managing a data center "lab" to replicate the experience.

Though this isn't particularly challenging, it's also not fast or cheap. Schools would need to seek partnerships with a local data center or centers to acquire the equipment and then find a third-party project manager to oversee it. They might also need (with the help of their data center partners) to collaborate with local or state governments to line up grants or other funding to help with the costs.



### Assembling a teaching team

From there, the next step is to find people who can actually teach the curricula. Since there's a lot more money to be made working in data centers than teaching kids about it, it can be a hard sale to get data center professionals to give up their time and expertise when there's no direct benefit to them.

We'll need to get creative with the ways we recruit teachers, particularly emphasizing the opportunity to elevate their personal brand or profile within the data center community as well as to play on concerns about a legacy that some experienced professionals might find important. There's no better way to accomplish both than by taking the opportunity to shape the minds and futures of the younger generation in their area.

Importantly, instructors wouldn't need to become full-time teachers. We can offer them the chance to give guest lectures, or single courses that might take 20 hours of teaching time over a semester.

### Refine and expand the curriculum

All careers are multifaceted and working in a data center is no different. While data centers are tech-heavy operations, they also need business leaders, marketers, salespeople, and finance and accounting professionals.

Introducing real data center education into colleges and trade schools means we'll need to incorporate curriculum beyond just technology-related material. We should aim to include leadership training and development, as well as survey courses for other functional areas of the operation.

But unlike the four-year university model, where students have to get new books every year that cost thousands of dollars, this program would be delivered via lower-cost community colleges and feature digital content – funded by government programs and private donations – that would be either very low-cost or free to students, enabling more students from more diverse backgrounds to engage with minimal barriers.

### Promotion to create an eager pool of learners

The final step in the process is to fill the classes with eager students.

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**Many students and families in lower-income areas might not be aware of how lucrative data center positions – even entry level ones – can be.**

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Data centers can greatly improve the chances of these programs gaining adoption across campuses by actively participating in high school and college career days, helping students put a human face on those monolithic buildings they see on the side of the highway. Getting out into the community, engaging with students, their friends and families helps break down the air of mystery of data centers that we've created for ourselves over the years and gives them a peek into a future they never knew was possible for them.

We can also broach dual-enrollment opportunities for high school students, similar to how collegiate-level math and science courses are available to high-achieving high schoolers, to extend the reach of our message and do it earlier in the educational process.

None of this will be easy or necessarily quick. But it's a viable and reasonable path for generating opportunities for these communities while creating a permanent solution to the staffing crisis we all face.

# HOW INCLUDING DATA CENTER EDUCATION IN COLLEGE CURRICULUM BRINGS WIDESPREAD BENEFITS TO EVERYONE

Incorporating data center education in college-level programs creates new opportunities for students, communities, and our industry

More people are retiring from data centers than are joining the profession. Research suggests that about 33% of data center professionals in the US [expect to retire](#) by 2025, and as I previously noted, the pool of candidates to replace them is small and shrinking by the day.

Our typical approach as an industry – relying on expedient solutions like upskilling employees or poaching from competitors – to filling open positions has long ignored the glaring fact that we’re simply not doing a good job of promoting our industry and the careers waiting inside the doors of our data centers.

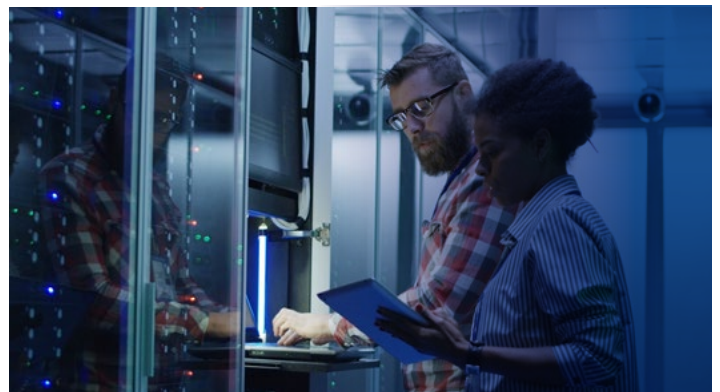
But in every crisis, there’s opportunity. The growing talent shortage amid exploding growth in data center demand is an opportune time to reimagine our entire approach to talent development and acquisition, and how those strategies can align with broader goals to create high-value benefits that extend beyond a data center’s walls.

There’s a strong case for incorporating data center education in college-level curriculum as a long-term, “renewable” solution to closing the talent gap and putting the industry on more solid footing for the future. Targeting these educational programs in regions with a high concentration of data centers, tech-related businesses, and potential workforce candidates is the ideal approach to creating widespread benefit for the industry, as well as for students, workers, and the local communities of which become part of the fabric.

Here’s a look at the many benefits data center education could bring to everyone involved.

## A NEW WORLD OF OPPORTUNITY FOR STUDENTS

Planning a career path when you’re still young is a rite of passage and one of the joys of adolescence. It’s also confusing and very difficult, regardless of your age, and especially true for those in underserved populations with limited access to traditional university and career paths.



These areas are often in close proximity to data center facilities, as well as both community colleges and local trade schools. Yet many of these students are unaware of career opportunities beyond what they hear about in school or see on TV. They may see military service as the surest, most direct career path option or target traditional work in skilled labor like electrical, plumbing, or other technical work. They may not have had the means or access to more robust career information or may be the first in their family on track for post-secondary education, leaving them generally to figure things out for themselves.

Introducing accessible and affordable, but comprehensive data center operations education, offers a completely new, lucrative, and sustainable career path they might not have known about. Even if their strengths aren’t in math or engineering related disciplines, there are still plenty of other opportunities across different functions and departments within a data center operator’s organization – all of which can be promoted through local co-op and internship opportunities to reach students earlier in their career development.

The benefit to students expands to the communities they live in, too. Many of these areas are severely underserved and underemployed, where demand for jobs outstrips available well-paying positions. Collaborating with local high schools, community colleges, and trade schools can dramatically reverse that trend over time by creating a well-defined, end-to-end career roadmap supported by easier access to requisite skills training.

## DATA CENTER EDUCATION IS A WAY FOR PROFESSIONALS TO BUILD THEIR PERSONAL BRAND

Students aren't the only ones who'd benefit from a stronger, purpose-built data center curriculum. Data center employees can also benefit from getting involved as instructors to boost their professional reputations and create future opportunities for paid speaking engagements, writing collaborations, or other career-boosting activities outside of their day jobs. Existing employees can also benefit by enrolling in these courses, as many of the learning opportunities on site are limited to on-the-job training rather than formal theoretical learning.

One key trend we should keep in mind is the 21st century professional isn't planning to work for the same company for the entire 40-50 years of their working lives. The typical professional will work in multiple companies and have multiple titles over their career, as many as 12 changes, according to some sources. And as professionals increasingly become more like business entities themselves, individuals need to develop a personal brand they can use to attract opportunities over the coming years and decades.

Teaching data center curriculum presents a perfect opportunity to build that personal brand, elevate their profile, and unlock previously impossible professional development opportunities. Of course, the position itself may come with a stipend, but a savvy professional will find ways to make it pay off far beyond the pay they receive for their teaching services.

## RENEWABLE INDUSTRY TALENT PIPELINE

For data centers, college-level programs don't just offer a way to give back to the community, or to help professionals build their careers. It's the most direct, strategic, and sustainable way of cultivating and curating a larger pool of candidates for infusing new talent into the industry as well as streamlining conventional retraining or up-skilling of existing employees.

Traditionally, data center employees who want to explore roles in other parts of data center operations or management are trained in-house, which requires dedicating time and resources to an activity that, frankly, is not a data center's core competency. It also takes the employee and a trainer away from his or her primary responsibilities.

Conversely, offering to reimburse or pay for them to attend an accredited training program at a local community college is a wiser investment of time, resources, and goodwill. Employees can take the courses during their personal time, freeing them to focus on their daily tasks while also offloading the curriculum development and teaching to a more appropriate resource — usually at a fraction of the cost of developing a customized in-house program and hiring trainers to teach it.

Combining continuing education opportunities outside of the workplace with a steady flow of new students from our high school and community college recruitment efforts, it's a sure-fire way of cultivating a diverse workforce purposely built and educated to support our industry as it grows.

## A LITTLE LESS CONVERSATION, A LITTLE MORE ACTION PLEASE

The data center industry has reached a crucial point in its existence. Our traditional philosophies about recruiting and talent development have repeatedly proven insufficient in the face of soaring demand for data center services.

It's time to replace our outdated, myopic approach to sustaining our operations with a data center education program that's a natural, logical, and effective long-term solution to our impending talent crisis. But merely talking (or writing) about it isn't going to accomplish much.

As data center professionals, we're accustomed to taking a mission-critical mindset when it comes to our customers' operations. Now it's time to apply the same level of urgency, creativity, innovation, and initiative for our own.



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