

Telecom Datacenter Infrastructure (DCI)





What is the Telecom Datacenter Infrastructure (DCI)?

Telecom's Datacenter Infrastructure (DCI) team is responsible for providing on-premises cloud computing resources to internal and external Customers of DTI in the form of virtual machines. DCI is tasked with auditing and maintaining capacities to support current and planned workloads and providing the means for DTI to ensure adherence to contracts and licenses.

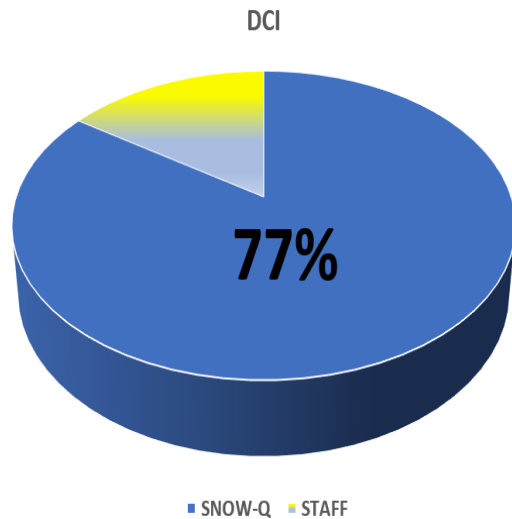
Initially, manual administrative processes were needed to fulfill DCI's mission. From the start, our goal was to reduce the surface area between our Customers and the resources they needed while achieving our mandate as stewards of those resources.

We first identified the reasons why our Customers contact us: to request new servers, to modify existing servers, to delete old servers, and to provide new users access to a Customer's managed assets. Then we engaged the **servicenow** team, in Application Delivery to provide request forms for each of these contact points, enumerating every field necessary to complete each.

Even though we were processing these requests manually, we approached this knowing that we would eventually automate these requests. If we had to ask about a vague or missing item, we converted that ask into a change to the proposal to eliminate the need to ask in the future. Satisfied that the manual processes worked, we set about automating them.

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The plan was to create a process that mimics a DCI staff member's interaction with VMware, **servicenow**, and other subsystems needed to fulfill these requests. DCI employs Git, Ansible Tower, and Python to automate its work. Ansible already has significant integration with VMware, but its **servicenow** integration was greatly lacking. It did not have any means to query **servicenow** for data efficiently, and it did not support OAuth authentication, let alone Okta. Fortunately, Ansible is open source.



We created the code to support our project, submitted it to become part of Ansible's core product, making us the primary maintainer for the **servicenow** collection in Ansible. Our tooling was ready with our new code in hand and a service account authorized by the **servicenow** Team to access **servicenow** via OAuth and later via Okta.

On Tuesday, June 29, 2021, at 3 pm, the **servicenow** Queue Processor (SNOW-Q) went live. It had been extensively tested, but we continued to manually approve requests before allowing SNOW-Q to process them. Keeping the training wheels on allowed us to ensure the requests were handled with the fidelity we required. On Thursday, August 5, 2021, SNOW-Q was unleashed to begin analyzing and approving requests on its own, within defined limits. Since going live, DCI received 282 submissions, with SNOW-Q completing 77% automatically.



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Some of SNOW-Q's features are:

- Operates 24/7/365, meaning requests can be submitted anytime, day or night, year-round
- Runs every 2 minutes, on the hour. Requests should be picked up within 2-4 minutes of submission unless SNOW-Q is busy or the request needs peer review
- Changes no longer need to be coordinated with DCI. If a change needs to be scheduled, the Requested Date field tells SNOW-Q when to look at the request
- Leaves work notes in tickets, as servicenow.dci, as it reviews, approves, progresses, and fulfills requests. If a request falls outside its authority, described below, or encounters a problem along the way, it will note the reasons and actions taken
- Vets requesters to make sure they have the authority to make the specified request
- Checks, in real-time, that resources are available for new or modified requests. If resources are not available, SNOW-Q will request peer review



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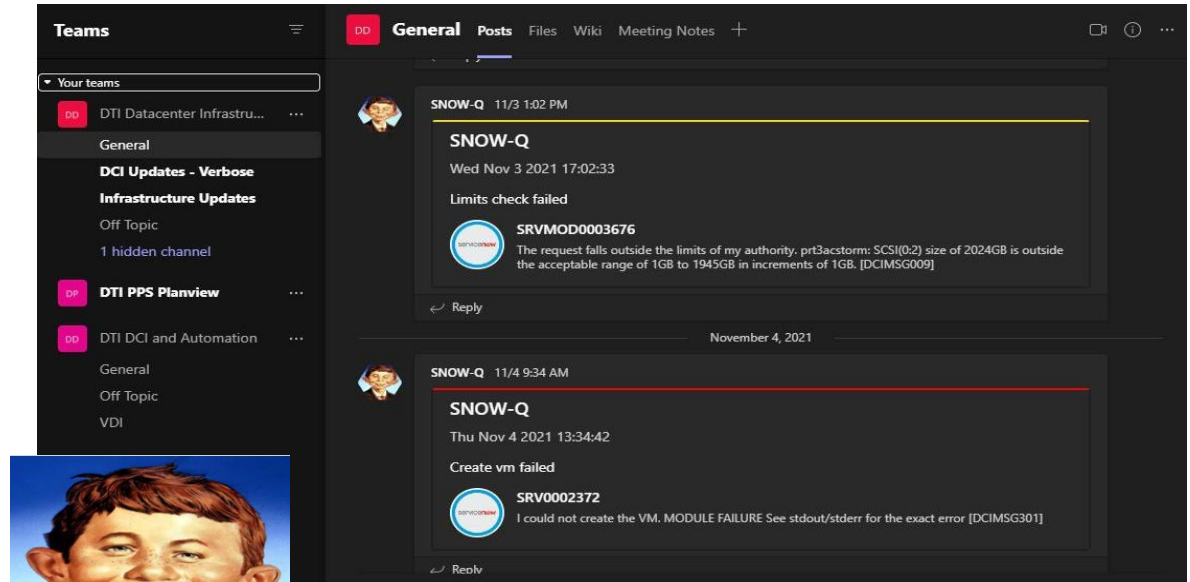
Some of SNOW-Q's limitations are:

- SNOW-Q can't read free-form text fields. Any instructions in 'Reason for request' or 'Description' will be ignored unless the request is reviewed by a DCI teammate. If a request does not fit any existing forms, email us at DTI_DCI_Admins@delaware.gov
- SNOW-Q auto approves up to 5TB for a single disk and auto approves up to 10TB total storage for a VM
- SNOW-Q can approve VMs up to 6 CPUs with the memory requirements below, in 1GB increments. Anything outside these ranges requires review. Configurations for 7 and 8 CPUs are provided as a reference for manual evaluation only

CPUs	Memory	CPUs	Memory
1	1-8GB	5	8-48GB
2	2-16GB	6	8-64GB
3	4-24GB	7	16-96GB
4	4-32GB	8	16-128GB

What, me worry?

The SNOW-Q avatar* represents the artificial engineer member that does the job of “3” shifts junior engineers.



*The avatar is used for research purposes only and is not used as part of any resold products or for profits.