

## ARRT Maintains High Availability While Accelerating App Deployment

Since 1922, the American Registry of Radiologic Technologists (ARRT) has helped ensure that the people who administer exams such as X-rays, CT scans, mammograms, and sonograms are fully qualified for their role. “We create tests for people in the medical imaging field,” explains Shaun Bader, principal lead systems engineer at ARRT. “We make sure that they’re positioning people the right way and not irradiating patients, and that they know how to properly administer any of the digital imaging procedures in the modern medical industry.” Approximately 385,000 radiological professionals currently hold ARRT credentials.

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– Shaun Bader, Principal Lead Systems Engineer  
American Registry of Radiologic Technologists (ARRT)



Industry | Healthcare



Network Solution  
A10 Thunder® ADC



Critical Issues

- Reliable service called for a high availability system with automatic failover
- Web infrastructure maintenance and updates required the entire website to be taken down
- Setting up new websites and virtual service sites was a tedious manual process



Results

- Robust load balancing has virtually eliminated unplanned downtime
- Applications can be updated individually without the need to take down the entire website
- Simple customizations have accelerated the deployment of new apps and websites

As the world's largest organization offering credentials in medical imaging, interventional procedures, and radiation therapy, ARRT plays a critical role in the healthcare industry. To help imaging professionals advance their skills and careers, and provide assurance of their qualifications for the organizations that hire them, ARRT has to keep its services reliable and available wherever and whenever they're accessed.

## Challenge: Improve Uptime for Critical Services

As the demand for its services grew in the early 2010s, ARRT expanded the infrastructure for its online services from a single web server to multiple IBM AS/400 servers. "We were moving everything over to Windows Server with Internet Information Services (IIS) and we needed a good way to load balance between those systems and evolve to a high availability environment," says Bader. "I don't know much about AS/400 management; there were two other developers who managed it initially. Once it came into my realm, I wanted to make sure that we had a really robust solution with automatic failover so I wouldn't be up all night wondering if it was running properly."

ARRT also needed more flexible and efficient ways to maintain its web infrastructure. "With our old infrastructure, if we needed to do any maintenance on our front-end authentication systems, we ended up having to take down our entire website on a single server or a box. We had to wait until after hours to schedule updates, which wasn't ideal for our dev and QA teams." A new application delivery controller (ADC) was clearly needed.



## Selection Criteria: Robust Load Balancing and Simple, Flexible Maintenance

As ARRT began evaluating its options for an ADC, reliability and simplicity were key criteria. "We didn't want to use the Windows built-in network load balancing because it just wasn't robust enough, and we didn't want to have to create all of our own custom hooks and reporting and failovers and so on," says Bader. The company looked at solutions from F5 and Big Iron, but found their pricing model problematic. "We didn't like the fact that they nickel-and-dimed you for every little add-on. If you want to do SSL offloading, that's a license. If you want to have multiple nodes, that's another license."

## Solution: A10 Networks Thunder ADC

A10 Networks offered the combination of performance, flexibility, and price effectiveness that ARRT was looking for. "We were very attracted to A10 Networks Thunder ADC. It offered an all-in-one solution. When you purchased the box, you got a license for everything on that box. It seemed much more friendly and customizable, so we were free to grow into the device the way we wanted to instead of having to go back and ask the business for funding for new features that we might not end up using after all," says Bader.

As a complete application solution, Thunder ADC enables effective server availability, protects vulnerable applications, and accelerates content delivery while reducing complexity and cost for IT operations. L4-7 load balancing and automatic failover support high availability, reduce downtime, and provides business continuity. ARRT initially deployed two Thunder ADC devices, then switched to a FlexPool® subscription software license model for even greater flexibility and cost efficiency. With FlexPool, organizations can flexibly allocate and re-distribute ADC capacity across both virtual and physical appliances as needed to manage both bandwidth and budgets more easily.

## The Results

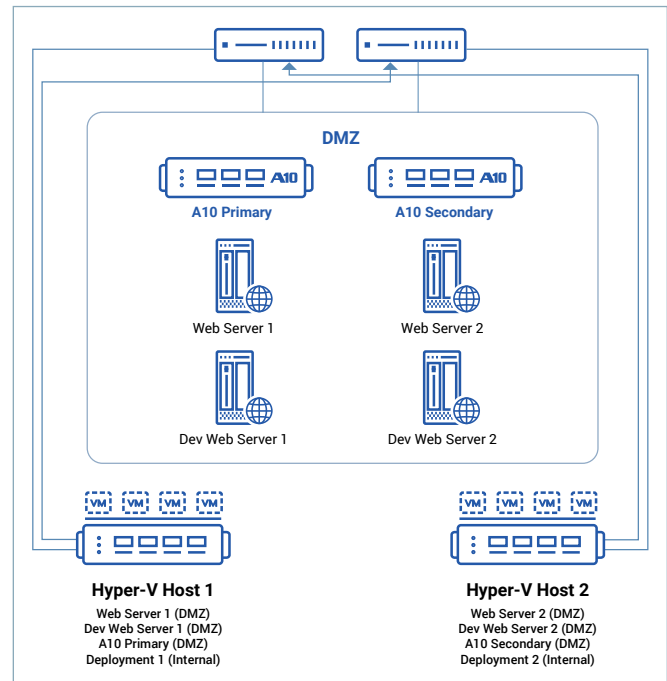
Thunder ADC provides the robust performance ARRT was looking for—and even more value than they’d anticipated. To begin with, the solution meets its requirements for reliable high availability.

*“We’re using Thunder ADC in a pretty simple form as a straight-up load balancer to fail between devices or IIS cluster nodes,” says Bader. “The robustness that A10 Networks has provided has been tremendous.”*

In fact, the reliability of Thunder ADC physical appliances initially led ARRT to go long periods of time without using their failover. “When we were on the hardware versions, we would go 900 days at a time without downtime because we had no reason to failover between the boxes and we rarely updated the code. Things just worked. As a result, we honestly got rusty on how failover worked for the system,” says Bader. “Now that we’re virtual, we’re doing Windows updates every month, switching between our Thunder ADC instances to reboot our Hyper-V hosts, and I’ve discovered just how quick and easy it is to fail over between the A10s. It feels good to know that both instances are in sync and up to date, and that in a situation where we’d need to failover, we can be off and running without any issues.”

ARRT has realized an added benefit of having the ability to take individual applications offline for deployment or maintenance, rather than having to take down the entire website at once. This has been especially valuable for the company’s software development process. “Let’s say we’ve got 10 apps running on our site. Some of them need dwell time to fully shut down to make sure we don’t muddy someone’s connection, which adds further delay. We worked with A10 Networks engineers to write checks to be able to say, ‘We only want to take down this one app on the server, but keep the rest of the website up and running.’ That way we can have these individual, really fast deployments of 3 MB of code for a single app versus 2 GB for the entire website,” Bader explains. “It can be a real quick in and out—we fail back and forth between the servers, and away we go.”

A similar mechanism applies for failover. “We’re monitoring at both the full-site level and for individual apps. That way, we can do full failovers between servers of the actual sites, or we can just fail the apps over between the sites if the root website is still working on both servers. It definitely gives us a lot more flexibility.”



Network Diagram with A10 Networks' Solutions

ARRT’s software development process gains a further boost from another simple customization. “We’ve written some PowerShell code in our Azure DevOps cloud-based code repositories that can manipulate Thunder ADC,” explains Bader. “If a developer has code in Azure DevOps that they want to deploy for a website, they’ll just tell it to publish. When that happens, our two internal deployment servers download the code from Azure and push it to a temporary location in our web servers. Then the PowerShell script automatically starts up and looks to see which Thunder ADC instance is active, so we know which one to manipulate server load balancing on. Next, it checks whether the virtual server or service is up on both servers. If it is, the script takes the first server offline, waits 10 seconds to make sure everything flushes over, stops the app pools we need to deploy the code on that server, runs through an automated test, then it brings it back up on the Thunder ADC. And then it just flops and does it for the other server or virtual service as well.”

Even entire websites can be brought on much more quickly. “In the past, any time we had to set up a new virtual service site, we had to open two browser windows and copy everything over with just a few minor changes. It was tedious,” Bader recalls. “Now I’ve written a script that lets me stand up an entire server within about 10 seconds. I just put in the website name and the IP address for the new backend server and that’s about it. And anyone else can use the script to do it the same way. It’s really helped because we’re now using Thunder ADC for not just production websites, but more and more of our development and QA and testing environments as well. That way, we’ve got real, almost 100 percent like-for-like scenarios for those environments. That’s one of the nice ‘powers’ of A10 Networks, being able to do something like that.”

## Success and Next Steps

While Bader has made ample use of the flexibility and customization allowed by Thunder ADC to meet both current and future needs, he continues to appreciate the solution’s simplicity. “We run an extremely lean operation. I’ve been with the company for 18 years, and for the longest time, it was me and a bunch of dev folks. Now, I have a help desk guy and another network guy, but between the three of us, we don’t have time to spend fussing around. We need something that just works, and that’s what we’ve got with Thunder ADC. Whenever my IT buddies in different organizations are looking for a solution, I tell them to definitely check out A10 Networks.”



### About AART

Headquartered in St. Paul, Minnesota, leading credentialing organization, ARRT offers certification and registration in a wide range of radiologic disciplines, helping people who work in medical imaging and radiation therapy to develop their careers. The company oversees and administers education, ethics, and examination requirements for medical imaging, interventional procedures, and radiation therapy, promoting high standards of patient care with each new credential they award.





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## About A10 Networks

A10 Networks (NYSE: ATEN) provides secure application services for on-premises, multi-cloud and edge-cloud environments at hyperscale. Our mission is to enable service providers and enterprises to deliver business-critical applications that are secure, available and efficient for multi-cloud transformation and 5G readiness. We deliver better business outcomes that support investment protection, new business models and help future-proof infrastructures, empowering our customers to provide the most secure and available digital experience. Founded in 2004, A10 Networks is based in San Jose, Calif. and serves customers globally.

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