Tomorrow's Branch, Today

How a local Iowa credit union is using branch virtualization and ID capture for a smooth banking experience

Linn Area Credit Union has taken advantage of modern branch technology to streamline its workflows and processes, as well as provide a top-shelf customer experience. By incorporating the latest in branch virtualization, as well as important auxiliary functions such as ID card capture, the Cedar Rapids, Iowa-based institution has managed to:

- Decrease the number of hardware peripherals at the member service pods, while solving compatibility issues.
- Improve transaction workflow and efficiency.
- Lower the overall cost of ownership for member services pods and teller workstations.

We'll take a closer look at how this local credit union has harnessed the same cutting-technology used by the biggest banks in the world, and used it to build an efficient banking environment for both staff and members.

Executive Summary

In 2019, Digital Check began supplying Linn Area Credit Union with teller check scanners that also offered the capability to scan an ID card on the same equipment – in the same teller session. This was one part of a major branch overhaul and core system change.

With the credit union's overall objectives in mind, the IT department endeavored to create a "connected" branch environment that was more practical for the Member, as well as easier for the Member Services team to operate. The result was a branch experience that was smooth for the member and for the services team – allowing them both to focus on the financial aspects of the visit, and not the technical aspects of how it is accomplished.

This Customer Profile covers three aspects of Linn Area CU's transformation. All three are equally important, and have been separated into individual focus segments, to give each topic its due without diluting the rest.

In order, those segments are:

1. Networking and Virtual Teller Workstations – For smaller and mid-sized institutions, switching from standalone PCs to a virtual environment often presents a daunting challenge. As an early adopter of this technology, Linn Area has shown that modern branch networking is within the reach of any financial institution, large or small. Rich Head, the credit union's vice president of information technology, outlines the scope of a virtualization project, and shares key considerations for those thinking about beginning such an undertaking.

2. ID Card Image Capture – Linn Area Credit Union captures full scanned images of checks and Members' driver's licenses and ID cards. This is accomplished within the same Teller session and workflow. There is no longer a need for separate pieces of hardware and software for each. Also, there is no longer a need to utilize magnetic stripe readers that have become known for their security vulnerabilities. We take a look at the use cases for capturing ID images and data at the new Member Pod Stations.

3. Network Integration and Project Management – Even the best-planned rollouts are never completely plug-and-play. Linn Area introduced a new teller platform and new hardware at the same time, including a switch to network-ready peripherals. We examine how they managed to transform their branch network and iron out the wrinkles with several types of hardware in a virtual environment.

The Virtual Branch Environment: Not Just for Big Banks

Virtualizing branches may seem like a prohibitively complex IT project — but a financial institution can accomplish it regardless of its size.

Walk into a branch at Linn Area Credit Union, and you're immediately met with a vision of the "Branch of the Future" – compact teller pods, open floor plans, and everything running on IP-based equipment.

That kind of sophisticated setup doesn't materialize overnight. Without a suitable IT framework, some of the things they do are difficult, if not impossible. It's a big reason why the Cedar Rapids, Iowa-based credit union was an early adopter of modern branch virtualization, and has steadily updated its hardware profile with network-ready workstations and peripherals.

Rich Head, Linn Area's VP of Information Technology, has a message for those hesitating to make the jump: Don't wait. It's easy to look up at the mountain of technical challenges and be afraid, but the slope isn't as steep as it seems, and the payoff for reaching the top is immediate.

In fact, taking the plunge has enabled Head's institution (Linn Area has five branches and around $500 million in assets) to do things you might expect to see at the biggest banks in America. There's no reason why a local credit union can't have a modern, connected infrastructure on par with that of their much larger rivals.

Among credit unions, Linn Area is likely one of the most experienced with virtual branch environments, having made the switch in 2012, shortly after Head started there. At that time, they had also recently implemented the teller pods – and running them from standard PCs was presenting some challenges.

"With the member-facing pods, our people are very mobile," Head recalls. "They go to different spots during the day. Logging in and out of a different PC each time they moved to a new station was not really working."

In a virtual environment, Head explains, the process of switching between workstations is much more fluid, since the terminals are essentially pass-throughs for applications running on a central server. Instead of the teller actively launching and shutting down programs every time he or she moves, the server simply displays them on a different terminal. The simplicity of that process was one reason why the teller pods were among the first workstations addressed in the virtualization project.

How difficult is it for a local institution to go virtual?

It's all too common for regional banks and credit unions to put off the switch to fully networked branches because it looks like it could be too difficult. But if Linn Area is any example, you

Branch Virtualization

Objectives & Key Lessons

Goal:

Transition from a stand-alone PC environment to fully virtual workstations at a local credit union; develop and maintain that environment through a core systems change.

Key Takeaways:

- Institutions of any size can benefit from networking, with an ROI possibly under 1 year.
- IT requirements can often be managed in-house – but many software providers can now provide support to fill in gaps.
- Compatible peripherals and training of frontline employees are important but often-overlooked parts of an effective strategy.

shouldn't miss out on a great opportunity by getting caught up in the challenges.

"The technology can be intimidating, because it is hard – especially if you don't have any dedicated staff," explained Head, the information technology VP. "When I started here, we really didn't have a lot of IT resources. We only had one guy doing IT as a system admin, nobody from a management level. It was basically a 'keep things running' mentality. I imagine that's the position that a lot of these smaller institutions are starting from, but it doesn't have to be as hard as it may look."

The first things that Head looked at were the basics: Did the teller workstations all have the same hardware? Was everyone on the same software version? How old was the equipment? His team started with a relatively conservative plan to phase out servers and PCs that were three or more years old. That assessment led to a compelling realization.

"The ROI for this project was less than a year," Head says. "You look at it and say, yeah, it's going to cost you $30,000 up front, but then you look at what a physical workstation costs you – not just to buy, but to maintain – and it's night and day, even without the side benefits.

"The cost savings on the physical equipment, of a desktop PC versus a workstation, is not that substantial; the total cost of ownership is where you're spending your money. It's not too hard to calculate the savings; some software vendors even have online calculators out there for that."

Linn Area rolled out its virtual environment in stages, first by updating its servers and replacing the teller PCs with virtual workstations, then by expanding the thin-client environment to its general offices outside the member-facing area. Once those initial hurdles were in the past, the ongoing systems maintenance actually got much easier, according to Blake Rodemeyer, the credit union's information systems manager.

"We just migrated the entire credit union from Windows 7 to Windows 10 without touching a single user's physical machine," Rodemeyer recalls. "If you had to manage that on desktop PCs, you can imagine how difficult that would be."

Adds Head: "[A local institution] could still take on this project in-house; you would mainly need someone with experience in virtualization and Citrix. You could probably do the maintenance with one full-time employee once it's up and running, and that's not the only thing that person would be doing."

How being nimble can be a big advantage

In many respects, Linn Area's size made its branch transformation *easier* to pull off, because a regional credit union doesn't have to deal with some of the obstacles that would be faced by a much larger organization.

"Imagine taking this on at a billion-dollar-plus institution, and it's going to be a lot harder," Head says. "It's not just about changing the technology – the technology was the easy part. The difficult

part is about changing the users, the training and all that goes with it. Being smaller has helped a lot in that respect."

Working with the right vendors is also important. When Linn Area first went to virtual teller stations in 2012, for example, its core system didn't include support for Ethernet-based check scanners. Because of the technical problems with using standard USB-connected scanners on a network (see sidebar), the credit union had continued to use back-counter branch capture. It was one of the few holdover USB devices that was not linked to the main virtual branch environment at all.

When Linn Area underwent a core platform change in 2019, it presented a chance to explore all the options. While networking capabilities were not the primary reason behind the core change ("It was overdue anyway," says Rodemeyer), they were a consideration while selecting providers. Linn Area ended up going with a smaller, credit union-focused core provider, Corelation, in part because of their flexibility, and availability, to address virtualization needs. Ultimately, a vendor who is both reliable and well-versed in networking is a key to the process.

"You could achieve this even if you don't have all the expertise in your own IT department. If you find a good vendor who's done this before, they can hold your hand through it, and then it's just using technologies that are already there," Head says.

"Other people today should not have to face the same hurdles that we did" when Linn Area first virtualized in 2012, Head adds. "Five years ago, it may have been difficult to find a provider who could do this for you, but now it's out there. It's much easier on the server side now – a discussion about virtualizing the server is a 5-minute discussion instead of an hour. It's the same with virtual desktops. It is not the same struggle to talk about anymore."

It's been well over a decade since Digital Check introduced its first modern network-enabled check scanner – the SmartSource Expert – and its more niche predecessors have been around for longer still. Toward the start of that period, financial institutions understandably had real concerns about things like compatibility, network uptime, and who would have the technical knowhow to run it all. Those days are long past, and as Linn Area's experience shows, if you're thinking about making the move, there's a lot less to be afraid of.

Using ID Card Capture at the Teller Window

Scanning full images of driver's licenses and ID cards not only speeds up workflow processes, but holds promising new applications for security.

ID cards at the teller window opens a whole new realm of possibilities for banks and credit unions. There are lots of things you can do with a captured image that just were not possible with traditional magstripe technology. But where should a financial institution start?

Linn Area Credit Union set out to implement ID capture several years ago with a simple goal in mind: Speeding up the workflow and improving information retention on long-form applications such as account openings. Along the way, it learned a lot about various applications of the technology – as well as about hardware compatibility. Since ID scanning devices were not "mainstream" peripherals for branch networks until rather recently, getting the hardware itself to run smoothly had presented a long-standing challenge until it began to be integrated with check scanners.

As Linn Area discovered, there's no one "right" answer for how to use ID scan technology, but chances for operations improvement are all around. The credit union had already been using stand-alone ID scanners for years by the time it decided to undertake a major overhaul of its teller hardware and software in 2019. That project presented an opportunity to iron out the wrinkles in the ID capture process as well.

According to Rich Head, Linn Area's VP of Information Technology, a major technical issue with the ID scanners was one that is common among USB devices plugged into thin-client workstations.

"When we were looking at our options, we knew right away that we did not want to continue using USB-connected ID scanners in our network environment," Head says. "You don't use the ID scanner as frequently as some other teller peripherals, so it would go into almost a 'sleep mode' and not be recognized when it woke up. Staff would have to unplug and reconnect it every time."

It is not unusual for one of two extremes to occur when a device designed for a USB connection is driven over a network: Sometimes, repetitive network calls to keep a device active can bog down the system. Or, (as in Linn Area's case), once a device is dropped, the network may not know where to "find" it again.

So, when Head and his IT department were shopping for teller hardware, a check scanner with an ID card reader already built in held natural appeal. Not only did it solve the card scanners' connectivity issues by "piggybacking" on the scanners' – simply reducing the number of devices being used provided benefits of its own.

ID Card Capture

Objectives & Key Lessons

Goal:

Improve branch workflow and account security using scanned ID card images, rather than simple magstripe swipe readers.

Key Takeaways:

- At minimum, auto-populating key information can assist with tasks such as account openings.
- Since a check scanner already has an image sensor at the teller window, it can effectively be used for ID capture, reducing the number of devices.
- Saved copies of photo IDs and machine-readable barcodes provide promising anti-fraud implications.

"It's not only having one less piece of equipment at the teller station," Head explains. "If you're capturing someone's ID for a new account opening at the teller window, that ID record is already in the system when they go to the office for the full account opening – there's no need for another capture device there. Under some teller capture systems, each location with a device is an additional license, so it pays to simplify your process."

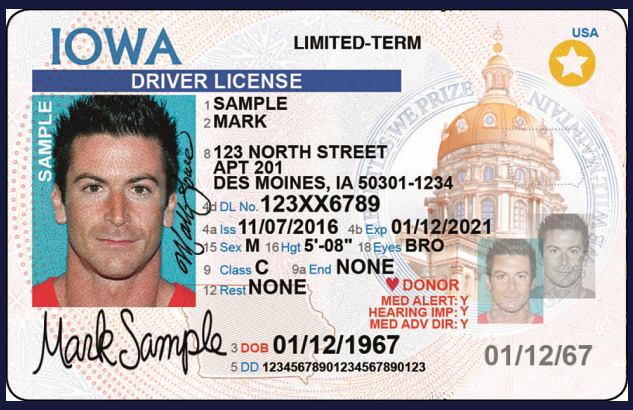
How does Linn Area use its captured ID images? Head says his team has considered several options, but for now, they're the most help when doing business with new members or with at-large customers.

"We'll mostly capture information from the card into our core system when a new person walks in. The teller initiates a new member record, and the capture app pre-fills it with everything it can capture through OCR or the barcode," Head says. "It crops out the ID and saves it to the core system, and then copies the data into the system as well, so that the ID record is there when the person goes to the office to complete the account opening."

"The other situation where we'll capture an ID is when a non-member comes in to cash a check," he says. "Our application creates a person record – not a member record – so we know who this is. It fills in the information and saves the captured picture. Compare that to the old days, back when you'd write a driver's license number on the front of the check!"

While Linn Area hasn't implemented them yet, Head says his team has considered the anti-fraud implications of ID capture for everyday transactions. It may not be worth running extensive verifications or full background checks each time a member comes into the branch, but some intermediate steps might be practical.

Ready for Real ID?



The new federal standard, now taking effect in October 2021, includes several providions for machine-readable security features. Most notably, PDF417 codes (a type of 2D barcode format) will be present on all new licenses. There are also requirements to include certain standard information fields such as names and birthdates, but particular designs or layouts for that information are not specified.

By using onboard ID capture functionality built into the check scanner, at left, Linn Area Credit Union was able to eliminate an extra piece of equipment at the teller counter. Scanned images of a member's ID card are captured directly into the teller system, and key information is extracted.

"Its kind of a crawl-walk-run process for us," he explains. "Right now, we're mainly capturing IDs for the improvement it brings to our own processes – but there would be nothing stopping us from adding some basic security tests. For example, does the barcode data match what's printed on the front of the ID? Is it a valid license number, or a valid format? Those are some things we might be able to run locally, without connecting to an external database, which is a key issue for teller transactions."

Another change happening in the realm of ID capture is the implementation of the federal Real ID Act, which formally takes effect in October 2020. Among the requirements of that law are certain standard features that Head thinks may be helpful anti-fraud tools for financial institutions in general, even if his own credit union doesn't encounter them often.

"Out-of-state IDs are not a big issue for us, because it's hard to meet our membership requirements from another state," he explains. "But it might be if you're a regional bank with branches across several states. Under Real ID, the format of the front of the card isn't the same from state to state, but the barcode is standardized nationally – so it's helpful to have something that's consistent across all formats and all states."

In the future, Head says, it will likely be beneficial for most financial institutions to incorporate some form of ID recognition into their processes, even if they're not capturing ID cards at the teller window. His credit union, for example, has looked into technology that would allow members to add an additional layer of security by taking selfies on their mobile phones, which would then be compared against an ID on file. That type of system could become commonplace for high-value transactions or very sensitive processes.

"It is worth looking into to cut down on fraudulent applications, for example," Head said. "We are fast approaching the point where more members will be initiating account openings online than in person."

Integrating Peripherals in the Network Enviornment

Why 'network-ready' hardware matters, and how Linn Area CU overcame technical integration challenges

A virtual desktop environment is a great way to simplify your IT operations in the long run, but it can take some planning to bring your peripherals along with you. Banks and credit unions in particular tend to have a lot of extra equipment at the teller window, so getting this part right is critically important.

In the nearly 10 years that Linn Area Credit Union has been virtualized, they've had experience getting nearly every kind of add-on to work on thin-client virtual workstations. While they've been through multiple iterations of software and equipment by now, their IT staff was willing to share some of their stories, and pointers, about making sure everything runs smoothly. USB-connected devices like printers, scanners, and signature pads can usually be plugged in with no issues – but if they're not designed to be driven remotely, it can be a problem.

Check Scanners

A check scanner is one of the peripherals in which built-in network support makes a critical difference – but not necessarily for the reasons you might think. With most USB add-ons, the main issue that arises is how to drive it remotely: Can it be located properly? Is it saturating the system with constant network calls, or becoming "lost" when not in use? Can it be shared properly with other devices, or does it need to be unplugged and reconnected every time?

These types of issues can sometimes happen with check scanners too, but the one that's frequently overlooked is that of bandwidth usage. Linn Area Credit Union experienced this issue during its original move to virtualization in 2012, when all of its scanners were of the ordinary USB-connected type.

"We did try USB-connected scanners over the network," explains Blake Rodemeyer, Linn Area's information systems manager, "but we could not get teller capture to work over USB. The bandwidth just did not allow it."

The problem Rodemeyer mentions is one that often comes as a surprise to those who aren't intimately familiar with a check scanner's internals. The raw images that come off the scanner's image sensors are sizeable – about 2-3 MB on average, depending on the surface area of the check. In a traditional teller setup, each of those raw image files is sent across a USB cable to the teller's PC, where it is processed and compressed to its final size of about 10-20 KB before being sent on.

Replace that PC with a pass-through thin-client terminal, though,

Network-Ready Peripherals

Objectives & Key Lessons

Goal:

Improve compatibility and branch efficiency by replacing USB-connected printers, scanners, and other devices with "intelligent" network-ready models.

Key Takeaways:

- USB-connected devices may experience issues with drivers and control in network environments.
- Properly locating devices, switching between them, and keeping them active can all be pain points.
- With check scanners in particular, onboard intelligence is crucial to prevent network bottlenecks.

and there's nothing to process or compress the image until it reaches the server. That means the 2-3 MB raw image must travel all the way out across the network at full size. With modern check scanners capable of speeds up to 200 documents per minute, those 2-3 MB files can sneakily add up to more than half a gigabyte of data per minute – enough to overwhelm an individual branch's network and slow the scan speed to a crawl.

That's the same obstacle that Linn Area was facing back in 2012, and so it opted to use back-counter branch capture, with a scanner connected to a standalone PC instead of a thin-client terminal. "It was the only workstation in our branches that was not part of the main virtual environment," recalls Rich Head, Linn Area's VP of information technology,

When the credit union updated its core software in 2019, it also took the opportunity to replace some of its hardware, and USB-connected check scanners were at the top of the list. It chose Digital Check's network-enabled SmartSource® Expert Elite model, and the bandwidth issue disappeared.

One of Linn Area Credit Union's teller pods features a pair of network-ready check scanners with modular recipt printers, with ID card readers built into the scanner. The signature pads remain the only standard USB-connected decives.

One of the main differences between a regular USB-connected check scanner and a network-ready scanner is that the latter has a small onboard CPU and extra memory built in. That allows it to handle certain key tasks onboard – including the image compression. With checks going out over the network as 10 KB finished images instead of 3 MB raw files, the difference was immediately noticeable.

"The raw data files were just too big," Head said of the previous USB-connected scanners. "The image compression was really what did it."

Receipt Printers

The other main "mandatory" piece of equipment for teller stations, receipt printers come in all shapes and sizes. They tend to be among the simpler peripherals to direct in a virtual environment. The most typical challenges have to do with resource sharing – for example, when a USB receipt printer and a USB scanner are connected to the same thin-client workstation, sometimes the system will not switch between them cleanly, requiring one or both to be unplugged or rebooted so that it is recognized.

Under Linn Area's teller pod branch design – in which tellers moved around a lot -- another challenge for the system was identifying the specific physical workstation at which the employee was located. The credit union managed to find a workaround with its provider using expanded registry key searches, although this was not a "true" networkable solution.

When Linn Area updated its hardware in 2019, it chose the ReceiptNOW Elite modular printer to go along with its SmartSource Elite scanners. As a device designed to be network-addressable, the ReceiptNOW eliminated the lingering detection and sign-in/sign-out issues – but more importantly, it saved a considerable amount of counter space. With square inches at a premium in the credit union's compact teller pod designs, the units' stackable design freed up a big area on the countertop by fitting underneath the scanner.

"Our focus on teller capture really got the ball rolling. We were already looking for an IP-based printer; we wanted no USB-attached devices," Head recalls. "In the evaluation process for core providers, we asked each of them, 'Which network scanners do you support?

"We had heard that Digital Check's SmartSource line used to be made by Burroughs, which Corelation® supported. We had liked one of a competitor's scanners, but the footprint was an issue. Stackable is a must for us, and stackable plus network-ready is really an ideal combination."

With the sharing issues addressed, Head and his team have considered moving their teller pods to a setup where one printer would be shared between two workstations: "In the teller pod scenario, having shareable devices between two stations is key. With a printer, it's not that hard – your staff just has to pay attention."

ID Card Scanners

Fitting an ID card scanner into a virtual environment can be tricky, since most of these devices were originally designed with standard USB operation in mind. Both of Linn Area's top IT people had experience working with this particular device, with different complications.

"At a previous institution, we had these ID scanners, and we had to follow the same procedure of, 'If it doesn't work, follow these steps of unplugging it, and plugging it back in, and relaunching it, and then it'll work,'" says Information Systems Manager Blake Rodemeyer. "But there was never anything we could do to make it work consistently."

Linn Area managed to ease the connectivity issues in a round-about way: "We bought keyboards that had built-in magstripe readers and USB ports, and we connected the ID scanners off of the keyboards," Rodemeyer recalls. However, that wasn't the end of the network challenges.

"We could get the USB to redirect and that kind of stuff, but the scanners themselves were problematic. The other aspect of what made them challenging was keeping them calibrated," Head says. "The only way you could get what I would call a quality scan was if you kept them calibrated. Well, the calibration file is done per device. The physical device may not move around, but the calibration file that you just did on the virtual machine does move around."

"Although we worked out how to retain the calibration … so that when somebody moves, we move the calibration file – the other issue is that people actually have to calibrate!" Despite the IT department's reminders to staff, "It was lucky if they were calibrated once per month," he said.

When shopping for check scanners, the prospect of an IP-based device with ID capture built in was naturally appealing: "The Digital Check SecureLink™ protocol with ID support caught our attention," Head says. "Since our core supported Burroughs scanners, they said, 'No problem at all.' But the interface turned out to be more complicated than anticipated."

As with many types of novel integrations, a few kinks had to be worked out on the way to launch. At the core of the matter this time was that the core platform, Corelation's KeyStone package, did not natively support the SecureLink network API. The credit union was able to make them work together with the help of DaLand CUSO, a credit union service organization specializing in custom integration and application development. But that wasn't the end of it, either.

Linn Area's teller check capture platform was designed to run on the legacy SmartSource DeviceSuite API, and for ID capture, the core platform was designed to accept images from a TWAIN interface, which was not part of either scanner API package. It

The interior of LACU's Marion, Iowa, branch blends small-town service with a modern branch concept.

Linn Area CU has experimented with virtual branch environments, teller pods, and open floor plans reminiscent of much larger institutions' future-branch pilot programs.

was a three-way convergence of software and devices working toward the same goal, but with slightly different (and incompatible) ways of getting there.

To get the project up and running on time, Linn Area called on DaLand again. They were able to devise an ingenious solution, using a unique property of the SmartSource Expert Elite: Each scanner contains both the DeviceSuite and SecureLink APIs onboard, but typically uses only one at a time. DaLand was able to build a software bridge allowing the APIs to "share" scanner resources – when capturing checks, it would be driven by DeviceSuite; when capturing IDs, it would switch to SecureLink. From there, it was just a matter of emulating a TWAIN output so that the core platform could read the resulting ID card image.

"We ran this past DaLand for a fix, and they did it all within a week or two before deployment," Head says. What's more, they added in workflow changes to make the images appear directly in the teller program – a feat for which he credits both DaLand's familiarity with the process and KeyStone's open API.

"They were very familiar with how to inject code and drive KeyStone with what it needs. The KeyBridge API – it's an open book. If you, hypothetically, said, I don't like the UI and I want the client to be completely different, you could do that. … They use the exact same API that they do for developers. So, if a teller can do it, your program can do the same thing."

The SecureLink API itself also contributed to making the process go smoothly, according to Head. Digital Check purposely designed the SecureLink network protocol to use a streamlined and standardized command set – not only for maximum compatibility, but also to make working with it simple.

"I think the simplicity of Digital Check's API facilitated that as well. It wasn't like you've got these 80 parameters to deal with. It was pretty much, 'You make this call, this is what you get in response.'

"Having that clearly defined so that DaLand knew, 'When I send this, I get A, B, or C in response,' was important. With some of these other APIs, it might not be overly challenging for someone who understands the API – but if you don't well define what the results can be and when those would happen … writing a program around that is challenging."