Rapid Unemployment Insurance Deployment in a Pandemic

State of Minnesota — Minnesota IT Services

CATEGORY:
Digital Services: Government to Citizen

CONTACT:
Emily Shimkus
Director of Communications
emily.shimkus@state.mn.us
(O) 651-201-1011
(C) 651-485-1354

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MINNESOTA IT SERVICES

Information Technology for Minnesota Government

Executive Summary

On March 13, 2020, Minnesota's Governor Tim Walz signed Executive Order 20-01, which declared a peacetime emergency and marked the start Minnesota's official COVID-19 response. In the weeks prior to the order, Minnesota's Unemployment Insurance (UI) system had already begun to see what the pandemic could have in store for Minnesotans. The work of the UI teams enabled Minnesotans to support their families during the pandemic.

The teams' work ensured that the system performed without interruption during times of unprecedented demand. **Throughout the pandemic, the UI system remained available 99.95% of the time.** The state of Minnesota's unemployment insurance system handled the increase in volume without sacrificing performance. **From March 2020 through February 2021, UI paid over $9,800,000,000 to Minnesotans in benefits.**

Idea

What problem or opportunity does the project address?

On March 13, 2020, Minnesota's Governor Tim Walz signed Executive Order 20-01, which declared a peacetime emergency and marked the start Minnesota's official COVID-19 response. In the weeks prior to the order, Minnesota's Unemployment Insurance (UI) system had already begun to see what the pandemic could have in store for Minnesotans. On March 15th, 2020, the system saw its first spike, which created a momentary error on the system's back end.

Right away, Minnesota IT Services (MNIT) and the Minnesota Department of Employment and Economic Development (DEED) pulled together a team of business and technology experts to make sure that the unemployment system remained available for the Minnesotans who needed it during the difficult days and months ahead.

Why does it matter?

Prior to COVID-19, the UI system was functioning well, with quarterly builds to maintain it. When COVID-19 hit, however, the demand for this system expanded in unprecedented ways**. Prior to March 2020, the typical traffic volume for the UI website was around 20,000 pageviews per day. Within a month, the MNIT web team watched traffic rise to 742,000 pageviews per day.** In March 2020, we saw 2.5 million visitors to the site, about 10-11 times the normal traffic. Figures 1 displays the peak of web traffic for UI. Figure 2 explains how number of logins correlate to website visits.

In April 2020, web traffic peaked over 800,000 pageviews (821,321 pageviews on 4/13/2020), with over 5 million visits and over 14 million pageviews to the site (about 20-24 times the normal traffic).

Figure 1 – UI website traffic in April 2020

Figure 2 – Growth in logins to UI
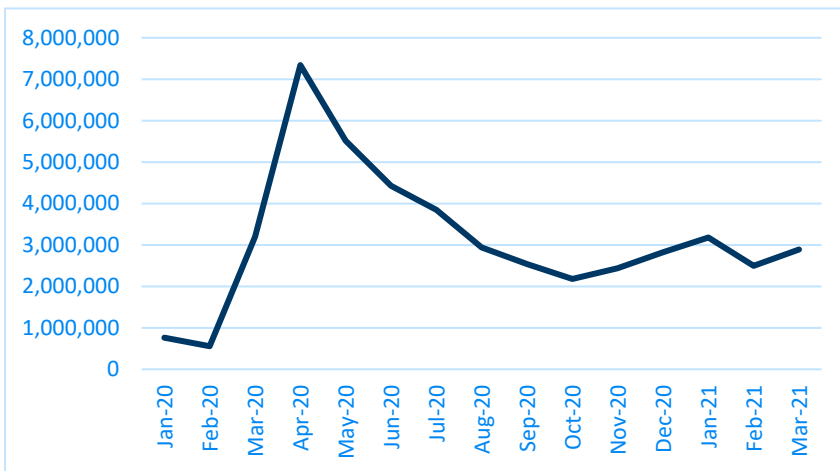
What makes it different?

Before the state's COVID-19 response, the UI system peaked around 4,000 concurrent users. By mid-April 2020, the system handled over 27,000 concurrent users, with more than 99.95% system uptime. MNIT added monitoring and service capabilities to the Unemployment Insurance website and call center at DEED to ensure it functioned end-to-end, and ready to deliver benefit changes as quickly as possible. **Minnesota maintained this uptime while delivering benefits more quickly than most states**:

- On April 8, 2020, Minnesota received final guidance from the U.S. Department of Labor to be one of the first states to make $600 additional compensation payments to people receiving unemployment benefits. These payments were authorized by Congress in the Coronavirus Aid, Relief, and Economic Security Act (CARES Act), which was signed into law on March 27, 2020.
- By April 15, 2020, Minnesota fully implemented the Pandemic Emergency Unemployment Compensation (PEUC), which provided a 1-week extension of unemployment benefits for eligible applications.

- On April 24, 2020, DEED began making Pandemic Unemployment Assistance (PUA) payments to people who are self-employed, independent contractors, and other eligible recipients who are not eligible for regular unemployment benefits. In less than one month, DEED's unemployment insurance team created the infrastructure to implement this new program, determine eligibility, prevent fraud, and adapt to the unprecedented challenges caused by COVID-19.

All these changes were made in record time, when many other states' systems could not handle the volume of traffic. Minnesota's approach was holistic, pulling in every team that was available to assist:

- MNIT scaled the infrastructure for UI website by doubling the server capacity, memory, and caching to handle an over eightfold increase in traffic.
- The DEED teams also found innovative ways to quickly approve applicants.

What makes it universal?

The demand for unemployment insurance was felt across the country. The CARES Act and additional federal legislation, alongside record unemployment, highlighted the need for UI systems to always be available and able to deliver benefits.

Implementation

What was the roadmap?

The goals of this project included:

- Increase the available hours of operation to ensure that Minnesotans had access to UI and to spread the traffic volume across a longer timeframe.
- Monitor the system continuously during available hours to respond to any system anomalies.
- Update UI for required system modifications or changes by federal and state deadlines.

Who was involved?

When a technical change was required, the UI Tech Team brought changes to a UI Technical Review Board. The board included both DEED and MNIT staff and managers. When the board approved changes, it went to the UI Director for final approval.

The UI Tech Team included:

- DEED:
  - DEED UI leadership oversaw interagency agreements.
  - DEED UI management translated law and policy into technical and business requirements for coding.
  - DEED UI business analysts documented system change requirements and tested system changes.

- o DEED UI project management coordinated business resources.
- MNIT staff supporting DEED:
  - o MNIT DEED managed and coordinate UI Tech Team efforts.
  - o MNIT DEED middleware monitored and responded to performance issues.
  - o MNIT DEED architects enhanced monitoring capabilities and analyzed application performance.
  - o MNIT DEED application developers implemented coding changes to reflect law and policy changes and to improve the overall performance of the application.
  - o MNIT DEED project manager coordinated technical resources.
- MNIT enterprise teams:
  - o Middleware maintained availability of website in the event of any DDoS attacks.
  - o Web team monitored web traffic to ensure websites stayed available and page load times maintained a reasonable timeframe.
  - o Virtualization staff increased storage availability and monitored virtual environment.
  - o Mainframe team reviewed and rebalanced mainframe memory resources. Ensured sufficient storage resource in enterprise data centers. Worked with vendors to ensure that if mainframe ran short of processing capacity, there was an on-demand option.
  - o Database staff ensured availability of UI databases during peak times.

The UI Technical Review board included: DEED UI management, MNIT DEED management, MNIT DEED middleware lead, MNIT DEED UI architects, and MNIT DEED and UI project management.

Examples of changes approved by the UI Technical Review:

- Implementing Supplemental Payment Process.
- Extending of operational hours.
- Implementing crossmatch processes with the Minnesota Department of Revenue (Revenue) and Minnesota Department of Public Safety (DPS).
- Implementing fraud prevention measures.

MNIT's desktop support team also imaged and prepped over 50 desktop computers for the UI call center to meet the demands of Minnesotan's with questions about UI. Starting in April 2020, UI extended their call center hours to support Minnesotans.

How did you do it?

The UI Tech Team expanded capacity for the UI system by nearly doubling the number of virtual servers in the environment. This capacity was pulled in from MNIT's centralized data center.

MNIT and DEED management formed a rotating monitoring team that continuously monitored and responded to any event that could impede applicants from accessing the system. MNIT also increased the regular deployment schedule from quarterly releases to monthly, and sometimes weekly, to accommodate the rapidly changing requirements from both federal and state legislation.

DEED worked with other agencies to improve data sharing, allowing for a quicker approval process for applicants. DEED and Revenue created a data-sharing agreement to allow MNIT teams to work together to

crossmatch wage information for Minnesotans that are self-employed and not traditionally eligible for unemployment insurance. DEED and the DPS also created a data-sharing agreement to validate the identity of individuals applying for unemployment.

When page load times began to rise to 8-15 seconds, the MNIT web team increased server size, increasing memory by 40% on all servers to handle the traffic, decreasing page load time to 5 seconds within weeks.

Impact

What did the project make better?

The work of the UI teams enabled Minnesotans to support their families during the pandemic. Figure 3 shows how quickly the daily applications for UI spiked in March 2020. The teams work ensured that the system performed without interruption during times of unprecedented demand. The state of Minnesota Unemployment Insurance system handled increase in volume without sacrificing performance.

Figure 3 – Minnesota daily applicants for UI
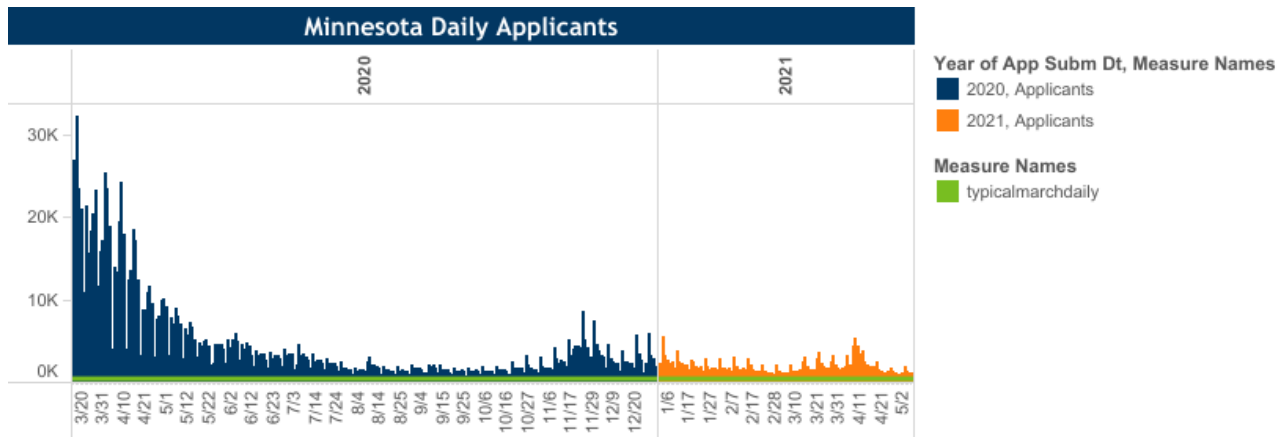
The expanded call center hours ensured that Minnesota could have their questions about UI answered as quickly as possible.

How do you know?

Throughout the pandemic, the UI system remained available 99.95% of the time. Various metrics prove how well the system performed and kept Minnesotans afloat under intense demand:

- **Benefits paid out**: From March 2020 through February 2021, UI paid over $9,800,000,000 to Minnesotans in benefits. For comparison, UI paid out $652,000,000 from March 2019-Febuary 2020.
- **Requests processed**: In the first week of 2020, UI processed 73,814 requests for benefits. Because of the collaboration and work of the team, at its peak, UI processed 559,000 requests in a week, which is a 657% increase in requests.

- **New UI accounts**: In 2019 the UI application created 160,686 accounts. In 2020 there were 1,027,074 accounts created. Accounts are generally created for a one-year period. During times of high unemployment, extension accounts are created to extend the number of weeks that an individual can request unemployment.

Tables 1 and 2 explain the growth in performance of UI in Minnesota because of this work.

Table 1 – Growth in amount paid out by UI

Year	Amount paid by UI
2019	$731,312,500
2020	$9,195,479,252
2021 (through March 31)	$2,043,006,862

Table 2 – Growth in accounts created for UI

Year	Accounts created
2019	160,255
2020	1,027,073
2021 (through March 31)	127,407

What now?

As part of the new normal to handle this traffic, the MNIT web team monitors traffic and routinely evaluates how to scale load balancing, caching, the number of proxy servers. They work across agencies to also monitor and adjust the environment to reduce security risks.

DEED and MNIT DEED continue with the same monitoring schedule to assure optimal performance. In addition, we are currently undertaking a system modernization project to update the user interface and streamline current system processes.