the Availability Digest

RBS – A Poster Child for Outages
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The Royal Bank of Scotland (RBS) and its associated banks, NatWest and Ulster Bank, have a sorry record for customer service. Over just the last three and a half years, the banks have suffered a half dozen outages, each depriving the banks' customers online access to their accounts, the use of their payment cards, and the immobilization of their mobile applications. Despite promises to upgrade their aging legacy IT environments, the service failures continue.

RBS' problems are not unique to them. Many banks throughout the world face the same problems. Established banks built their banking IT systems decades ago. They were implemented by a myriad of different software teams writing in different languages on different machines in different locations. The developers moved on. Documentation was either lost or was nonexistent.

Many of the languages used in the legacy banking applications are no longer used, resulting in a lack of skills to maintain the applications. The technologies available today to integrate applications did not exist decades ago, and the applications are often relegated to their own silos, unable to interoperate with newer applications.

The ongoing rash of banking mergers and acquisitions further aggravate the problem, requiring the integration of disparate banking applications. Add to this the demand by increasingly tech-savvy customers who want to bank online and via their mobile apps. These capabilities require new systems using new technology that somehow have to be integrated into the legacy banking applications.

Rewriting these applications will take years and cost millions of U.S. dollars (or British pounds, in the case of RBS). This is a problem faced by most established banks. However, the failure rate of the RBS systems makes it stand out as a primary example of the problems inherent in trying to maintain these old legacy systems.

The Royal Bank of Scotland Group

The Royal Bank of Scotland Group (the Group) is a holding company based in Edinburgh, Scotland. Its main subsidiary banks are the Royal Bank of Scotland, NatWest, and Ulster Bank.

As a result of the bailout of the Royal Bank of Scotland Group by the British government following the housing bust of 2008, the British government now holds a 73% interest in the Group.

A History of Frequent Outages

RBS and its sister banks have had a recent history of major outages that have affected millions of its customers.

June 2012 – Down for Two Weeks

Perhaps the worst outage occurred on June 19, 2012. The IT systems of RBS, NatWest, and Ulster Bank all came to a halt. Millions of customers were affected. They could not pay bills. They could not use their payment cards. They had no access to online banking services. It took two weeks for operations to return to normal.

Being plagued with the loss of online services for such a long time, the problems spilled over to other banks when expected payments could not be made.

The problem was a software upgrade gone wrong. Every night, the RBS Group executed a massive batch run of the over twenty million transactions that had occurred in the last 24 hours. The Group uses a batch management facility to automatically prioritize, schedule, and run jobs without human intervention.

Over the weekend of June 16 and 17, 2012, the Group upgraded its batch management facility. On Monday, June 18th, one of the batch runs failed. Consequently, on Tuesday, June 19th, the upgrade was backed out.

Unfortunately, the remaining batch jobs could not be run until the failed batch run was corrected. However, this required determining where the batch run had failed, as millions of transactions had been processed correctly up to the failure and should not be processed again. However, the operations staff could not determine at which transaction the batch run had failed. It took until Friday to determine the failure point and the cause of the failure so that the batch run could continue. It turned out that a critical scheduling file had been erroneously deleted.

By this time, several days of batch runs had accumulated and had to be executed. It took several days to work through the backlog. It took two weeks after the initial outage for operations to return to normal.

To aid its customers, the Group expanded its call center and opened bank branches on Sundays. It agreed to compensate its customers for any costs they incurred as a result of the outage. In the end, the two-week outage cost the Group £175 million.

March 2013 – A Hardware Fault

In March, 2013, a hardware fault in one of their systems caused a six-hour outage during which customers were unable to use their online accounts or withdraw cash from ATMs.

December 2013 – Outsourcing IT

As a cost-cutting measure, the Group began to outsource its IT management overseas to India. This allowed it to cut thousands of jobs of people with necessary skills in the Group's legacy systems.

On December 2nd, one of the busiest shopping days of the year – Cyber Monday (the Monday after the U.S. Thanksgiving holiday), the Group lost all of its online services. Customers could not access the Group's website or use their smartphone apps to do banking. Merchants could not accept purchases with the bank's payment cards. In addition to the loss of online services, accounts were being closed or were suddenly being reported as overdrawn,

The Group announced that the problem was not volume or hacking. It was a problem with the integration of its multiple legacy systems. It took three hours to restore service.

This was the third major outage in eighteen months. The Group Chief Executive, Ross McEwan, called the outages unacceptable. He admitted that "for decades, RBS failed to invest properly in its systems…. We are investing heavily in building IT systems our customers can rely on." He noted that RBS had preferred to struggle with its aging infrastructure. He pledged to spend £700 million over the next three years to improve the bank's systems.

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June 2015 – Lost Transactions

On Tuesday, June 16, 2015, CEO McEwan stated that he wants RBS to be the number one bank for customer service in the UK by 2020. As a stroke of bad timing, RBS lost 600,000 transactions the next day. Bills were not paid on time. Accounts were not credited with deposits. Checks were returned. Customers could not withdraw cash from their accounts.

The transactions were not recovered until the weekend.

December 2015 – Lost Accounts

In December, about 4,500 RBS customers with inactive accounts were told that the bank did not have these accounts and was not holding their funds. Customers had located these accounts through a national lost-account service that helped savers who wanted to trace savings that had been lying dormant.

The problem was caused by incorrect filters on computer software that was supposed to identify holders of inactive accounts.

RBS sent letters of apology to the affected customers, informing them to reclaim their outstanding balances by visiting their local bank branches.

January 1, 2016

Millions of RBS customers could not use their payment cards because the POS (point-of-sale) terminal said that they had entered a wrong PIN number.

RBS Penalties

The UK banking authorities have penalized RBS extensively for the problems that it has had with its legacy banking systems. In 2014, RBS was fined £56 million for software problems that prevented customers of all three of the Group's banks from accessing their accounts.

In 2015, the UK Financial Conduct Authority fined RBS £42 million, and the Bank of England's Prudential Regulation Authority fined RBS £14 million.

That is a total of fines exceeding £100 million. This is money that could have been well spent on replacing their legacy systems.

Lessons Learned

Aging banking systems are not limited to RBS. Banks across the global banking sector face this challenge. In mid-January, UK bank HSBC had a two-day outage that denied online access to millions of its customers. This outage came just six months after a previous major HSBC outage.

Not only are the old legacy systems difficult to maintain with their archaic software languages and lack of documentation, but it is extremely difficult and risky to add modern-day functionality to them such as online banking and mobile apps. These new capabilities are typically added by building them into new, modern systems that then must be integrated with the legacy systems. However, by and large, the legacy systems were implemented in a day when system integration facilities did not exist. Thus, the integration of the legacy systems and the new applications is very difficult indeed.

Newer banks are not faced with these problems. Unhindered by a complex, unwieldy IT infrastructure, they are better positioned to innovate. They are becoming serious competitors to the established banks.

One major advantage that the newer banks have is that they can be more facile at mining Big Data – the mass of data that a bank accumulates on its customers' behaviors. This can provide a bank with important tools to design new services that will attract and keep customers. The legacy systems of established banks do not fit well into this paradigm.

In December, 2013, RBS CEO McEwan promised spend £700 million over the next three years to improve the bank's systems. Two years have now past. Let us see if he can meet his commitment this time next year.

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