

Jon's Performance Musings: Ready?

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Peak Season Is Here

If your company is in retail or retail banking, you know what I'm talking about. The holiday season is the most challenging season for transaction processing. It is the time when transaction traffic will be highest, placing the heaviest demand on our systems. Thanksgiving and Christmas see the volumes for card processing increase dramatically. E-commerce sites will experience strong increase in traffic as consumers shop for the holiday.

How Bad (Or Good) Is It?

The increase in traffic is good news from a business standpoint. It is to be welcomed. More business, more money for your firm. However, as system managers, we need to be able to quantify the increase in business, and resulting demand on our systems. Over the years various clients have experienced modest (20%) to extreme (500%) growth over the holidays, based on the average daily volume of transactions. This is certainly dependent on the business type: Banking POS systems are different from grocery chains, are different from e-commerce, are different from pharmacies, are different from gas stations. Your industry and your applications are unique.

What Is Your Profile?

One hopes that you are tracking the metrics of the business transactions going through your systems. That way you know where you are and where you're going. If you have a history, as we do, of 2 years worth of transaction counts, it's pretty straightforward to project this year's peak based on last year's, and this year's growth rate. We've found that the ratio of last year's mid-year to holiday transactions will allow us to estimate this year's holiday transactions.

Talk To The Business

Those ratios fall apart, however, if there are changes to the business. Mergers and acquisitions obviously affect growth. Changes to the mix or profile of the transaction stream can throw your estimates off. An ongoing dialogue with the business is mandatory to plan effectively. They may be planning a simple marketing push with heavy advertising for the holidays, and, if that's successful, your numbers could be up significantly. Let's hope that's so. But let's make sure that the systems are ready.

Peak Profile

The simple fact is that your systems need to be ready to process for a single peak half-hour each year. If you know what the demand will be for that half-hour, and if you know that all of the components of the processing path are comfortably prepared to handle the workload for that peak, then you can relax. In fact, you can relax until this time next year. Again, depending on your industry, that peak may be the day before Thanksgiving, or the day before Christmas, or Black (Cyber) Friday. Actually, our experience shows that the peak transaction half-hour may not actually occur on the peak transaction day. That's why we detect and track the peak half-hour every month, and then project those numbers (with the business partner's input) to estimate what's coming.

Project Everything

You have estimated the peak, now you need to estimate the utilization. The important point here is to look at all the components of the transaction path. I have heard too many sad tales where transaction processing failed over the holidays because a single disk became too busy, or the SAN fabric became saturated, or the web services or the database tier was too slow. Don't just concentrate on the "usual suspects" such as CPU, memory, bandwidth, or disk, but also look at your processes and processing threads.

In Flight

I've talked in the past of the importance of processing threads, and this is always key to your capacity plan. As you project the transaction volumes, you must also project the number of "in flight" transactions. There is a simple formula to use:

ActiveTrans = TranRate * Response

So, at 50 TPS and .2 second response, you will have 10 transactions active on the average. If the system slows down to 1 second response, you will have 50 transactions active. If it really slows down, say to 10 second response, you will have 500 transactions active. Your systems can have plenty of hardware capacity available, but if they doesn't have the ability to handle all of the in flight transactions without queues building up, transactions will fail. The usual culprits of not enough threads are server processes, database connections, and cross-system communications.

Assume The Worst

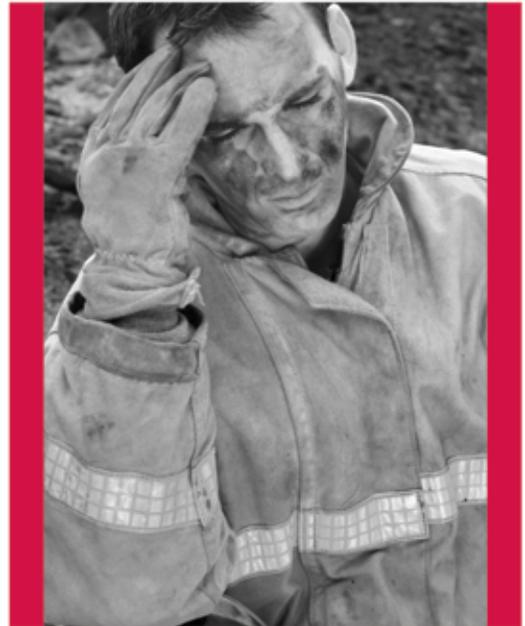
By the way, when you are doing the projections, assume that all components will be slower under load

and that response times will be at least double the worst-case response you see in normal operation. You should also assume that there will be conflicts in the processing path: An FTP conflicts with transaction traffic on the backbone; A batch job kicks off, or an operator starts a backup; Or in the case of shared SOA services, SANs, or database systems some other processing environment unrelated to yours kicks in and tries to suck up resources.

Happy Holidays

Figure out in advance what could possibly go wrong, and fix it before it could break. That way you'll have a stress-free holiday, and save your company lots of dough. [CS](#)

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