Ecommerce Readiness - Is your B2C Ready for the Buying Season?

THE CHOKE – ECOMMERCE CHALLENGES DURING THE BUYING SEASON

Holiday seasons are the harbinger of an ecommerce system's "Peak Preparedness." The almost exponential increase in the online demand puts an inordinate strain on any platform – however well designed or managed. As such, it makes a lot of sense to be aware of all the factors that influence your up-time and the different scenarios that could impact your portal performance and usability. Of course, any type of strategic realignment of the IT backbone – including hardware or software – needs to be thought through well in advance of the peak season.

Awareness of what hurts is half the battle

Only as Strong as the Weakest Link As the saying goes, every system is only as strong as its weakest link. If the application design holds together, it could be the web server going down, the database getting locked up or a SOAP Call getting timed out. This isn't even to mention all the hardware related outages that could take place in the blink of an eye. Murphy couldn't even begin to hold a candle to these situations.

B2C Sites tend to have a low tolerance limit for peak traffic surges

Warning Signs are Non Existent Peak loads on e-commerce applications have a curious "failure phenomena." The warning signs are almost non-existent.

Most e-commerce portals are of the thin client variety – designed to have a responsive, performance-oriented user experience that leaves a small footprint that performs seamlessly until a threshold usage or load has been reached. The very nature of the application architecture can leave a mistaken perception that "all's well."

But, in practice, an infinitesimal increase in the usage pattern can bring the system down to its knees.

"CYBER MONDAY" – A CASE STUDY

A top U.S.-based knowledge management firm, with over 60% of its global revenue coming in from online sales, decided to execute a major marketing promotion on a specific week during the holiday season. The promotion was called "Cyber Monday.

Without an evaluation of overall site readiness, tens of thousands of customers may have been impacted, even lost

The promotion offered 40% to 60% discounts on most products featured in the online catalog along with secondary options including free shipping, no-risk trials on selected products and secondary cross- and up-selling promotions. As a result, the promotion drove a six-fold increase in online sales for the U.S. market and a comparable figure for the week across other countries, including Japan and Germany.

This phenomenal spike in the number of hits was globally observed. For instance, the number of hits in the U.S. on one particular day during the promotion went up to a peak of 60,000 users from a normal day average of around 10,000. The orders also increased by a factor of six over night in the U.S. with other countries reporting spikes anywhere between four and seven times, in terms of orders and revenue. The company hadn't predicted that it would have received such a high response to its "Cyber Monday" promotion. Yet, it had performed a strong analysis of its preparedness for high traffic volume. Without an evaluation of overall site readiness, tens of thousands of customers may have been impacted, even lost.

The Fall Out

An online B2C system going down during a peak usage period can have disastrous fall outs for business. For starters, the direct loss of sales during an active spending season can be nothing short of debilitating. It's also important to recognize that indirect revenue loss – through offline / online partners and affiliates – can account for another sizeable chunk of the drain.

Add this to the fact that bad news inherently travels fast compounded by the efficiency of social networking, and there are multiple dimensions to contend with in repairing the damage.

Indirect revenue loss can account for a sizeable chunk of the drain

The "Cyber Monday" promotion was planned well in advance and advanced predictive models using data from similar global promotions were utilized to predict web site hits, conversion ratios and more.

As a result of this deep dive analysis, multiple perspectives were identified in the form of high availability, redundancy, Search Engine Optimization, page load times, low level design client and service layer cache management, load testing strategies, and usability. Each perspective was analyzed and due diligence was performed to assess the anticipated peak load which lead to interesting site optimization requirements.

Ratings & Numbers

Customers do a lot of background research before deciding on the best B2C portal in which to make their online purchases. Some of the consumer selection factors, in the increasing order of priority, include:

• Usability
• Speed & Performance
• High Availability
• Web Site Certifications –SSL Security

Some or all of these factors are adversely impacted in a fall out, not to mention the drop in online viewership and ratings by reputed Business Analysts.

The "Cyber Monday" consulting team came out with a strategic set of optimizations – technical, architectural, usability and QA, plus recommendations on investment with respect to hardware infrastructure. A highly efficient disparate caching strategy was adopted resulting in a 10-20% code base change.

The business impact of a site crash can be far reaching

Caching was enabled at multiple levels – client, web server, service layer and the database layer. This was done to assure that product, pricing and catalog information was available at each layer with the deeper architectural layer being called upon only when the data (the sales pricing component) turned dirty as a result of business fluctuations.

Another interesting aspect was the presentation layer optimization that used HTML 5 techniques to speed up launch time to a flat four seconds at peak concurrent usage. AJAX and DOM technologies further ensured balanced load across client and server machines. A huge contributor to this exercise was the detailed AB testing that was carried out to identify an enjoyable cart experience.

THE HEALTH CHECK ANALYSIS

Dimensions & Indicators

There are multiple parameters affecting online site availability. Separate components including hardware sizing, software, and support all play an interrelated role in site health. To assure optimum performance and site efficiency, it is crucial to have a systematic assessment of all the factors that can impact the site through the peak load phase.

Simplified Approach

One simple approach to understanding the holistic nature of the factors driving a B2C portal is to draw up the broad dimensions or categories of the site and identify the multiple indicators, or influencers, under these dimensions. As an example, some of the dimensions could be hardware set up, portal design, and disaster recovery.

A Ubiquitous Readiness Index tool is of great help in diagnosing and fixing peak readiness factors

Each of these dimensions with also have multiple indicators. "Hardware Set Up" could have indicators such as RAM Size, HDD, Processor Speed, Load Balancing, and Clustering

Each of these factors can then be bucketed as a linear or an exponential influence. Based on the weight, age and the coverage pattern, the overall impact can then be derived at a dimension or holistic level using an experiential formula.

The dimension level values are rolled up to get to a Universal Index or a Ubiquitous Readiness Index (URI). The URI gives the overall readiness state of the system – or the big picture. This takes into account confluence of multiple factors, dimensions, indicators, weightings and "on the ground" coverage values. Some of the indicators that were found to impact the overall readiness during the preparation phase of "Cyber Monday" were hardware size, clustering, server monitoring, disaster recovery capabilities, page load times, and UI usability.

These were grouped under three primary dimension umbrellas:

1. **Infrastructure:** This dimension relates to hardware size, current peak traffic, clustering, analytics, monitoring and unique visitors. For example, analytics is a measure of the date coverage collected about system usage – the desirable state being 10, and 0 indicating no data collation techniques employed as part of site intelligence. Rating field status against the ideal situation indicates the coverage index – a number between 0 and 10.

2. **Design & Usability:** This dimension indicates the usability and technical design aspects of the portal such as page loads, clicks to buy, product categorization, cart analytics and W3C compliance. This dimension is easier to identify and evaluate since most of these parameters are a function of overall sales benchmarks.

3. **Support:** Disaster recovery, monitoring, alerting and manual stand-by are important parameters in determining how support can impact readiness. "Lack," "partial," or "existence" determines the coverage index between 0 and 10.

Infrastructure	Design	Support
▪ Peak Traffic ▪ Unique Visitors ▪ Analytics/ Diagnostics	▪ Average Page Load ▪ Clicks to buy ▪ Product Cataloging	▪ MIDAS Support ▪ Failed Carts Stand By ▪ Cart Abandonment

THE LISTER E-COMMERCE READINESS INDEX APPLICATION

The Lister E-Commerce Readiness Index application simulates real-world readiness and provides a measureable health check on the "market ready" state of your e- commerce portal. It also helps balance and off-set multiple factors to give a holistic perspective on the risks and trade- offs of each dimension of the site environment.

Each indicator has a coverage value which is provided by the user, indicating the current state of the system. It is typically a value between 0 and 10, 0 being the lowest implying a total lack of coverage and 10 being the highest. Each indicator has a weighting attached to it which is our estimate of the entity's influence on online readiness.

The system puts together all the ground values along with their appropriate weights and uses a proprietary statistical algorithm to predict dimensional and holistic indexes. There is also a health simulator which helps users configure multiple values for different dimensions and watch the overall impact of these changes on the readiness quotient.

Another advantage of using the simulator is the ability to quickly assess the most cost and time effective solution to move towards being in the "healthy" zone.