

A PLUMSLICE EBOOK

# TAKING THE PAIN OUT OF PEAK PLANNING

YOUR GAME PLAN FOR SURVIVING THE ECOMMERCE CRUSH



PlumSlice

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KEY: ⚡ = Action Item    ? = Questions to Ask

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## THE **BIG** PICTURE

Retailers have unprecedented opportunities to reach the consumer these days via diversified marketing channels and the ever-growing phenomenon of social media. It is the best time in history to communicate and engage with the consumer on a powerful, one-to-one level. That's the fun part. Behind the curtain, or the cash register, is a complex universe in which all facets of your ecommerce business are working to get your customer to that shopping cart.



With a leadership team having a combined 70+ years in retailing, ecommerce, and IT management experience, we at PlumSlice know how essential each ecommerce function is to achieving your sales objectives. As retailers ourselves, we have felt the pain, having managed organizations and taken the heat when glitches occur. We also know even perfect planning may not anticipate all events—natural disasters can disrupt the supply chain. But we firmly believe that planning always pays off.

Here, the PlumSlice team offers our game plan for not only surviving the peak traffic periods but also examining where your organization may need strengthening for the longer term.

We give you practical advice you can immediately put into action as well as some ideas on the big picture—how to take the functional groups in your ecommerce operation to the next, more effective level.

## TEAM **LOVE**

To get ready for a peak season, how about starting with a peak planning “get the ball rolling” session—virtual if needed—to bring together your functional teams? Offer an incentive for the best new ideas. Department-level employees know they will be facing crunch time. This is a good time to foster teamwork and collaboration between all team members. Spend a minute looking at the Google culture page: <http://www.google.com/about/company/facts/culture/>. Companies on the move remember to put people in the equation.

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# MOVING PARTS

If we were to ask you, right now, if you had a complete vision of how your company will achieve its objectives during peak traffic, could you answer? Beyond high sales stats, fully working sites, fast order fulfillment and the like, could you describe the full picture?



Start as early as six months ahead to look holistically at your ecommerce operation. Make sure all facets are giving you the support you need to effectively serve the customer and close the sale.

The first order of business is taking a step back and looking across the organization at your budget and staffing resources. Whether you're public or private, answer to a board or not, you're going to need to show return on investment at the end of the peak period. After the peak planning session, your functional teams need to present a thorough budget for resource support during peak season. As part of this budget, they need to present a rationale for head count and other investments.

If temporary help is needed, your managers need to identify training needs well in advance. How many of us can spot the temps when we are choosing and purchasing during a holiday or other peak season? Pretty easy.

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Then take these steps:

**⚡ WEIGH EXPERIENCE AGAINST COST.** For example, would the cost of higher wages for a more experienced employee be offset by less picking errors? Or would you be better off maintaining the same skill level but investing more in training?

**⚡ TASK YOUR MANAGERS WITH A QUICK ONBOARDING PLAN.** Have them document all training plans for peak hires and develop clear instructions on job tasks. Require immersive training for new front-line staff. Good onboarding plans can do double duty for getting part-time staff quickly up to speed.

## THE FIVE MOST **IMPORTANT** PIECES OF THE PUZZLE

You've set your goals for the next peak period in terms of sales objectives and ROI. The peak planning session and budget requests are in from all team leaders. Before budgets are struck and hiring begins, let's look at five critical functional areas of the organization from both a resource and holistic view. We encourage you to browse through each function and use this five-point game plan, if you will, to ask hard questions of your managers and teams—then task them to put these action items into play!

Five pieces that need to fit are:

**Marketing, Mobile, and Social Media**

**Operations and Logistics**

**IT**

**Merchandising**

**Customer Care/Customer Engagement**

# GETTING ABOVE THE NOISE

MARKETING, MOBILE AND SOCIAL MEDIA



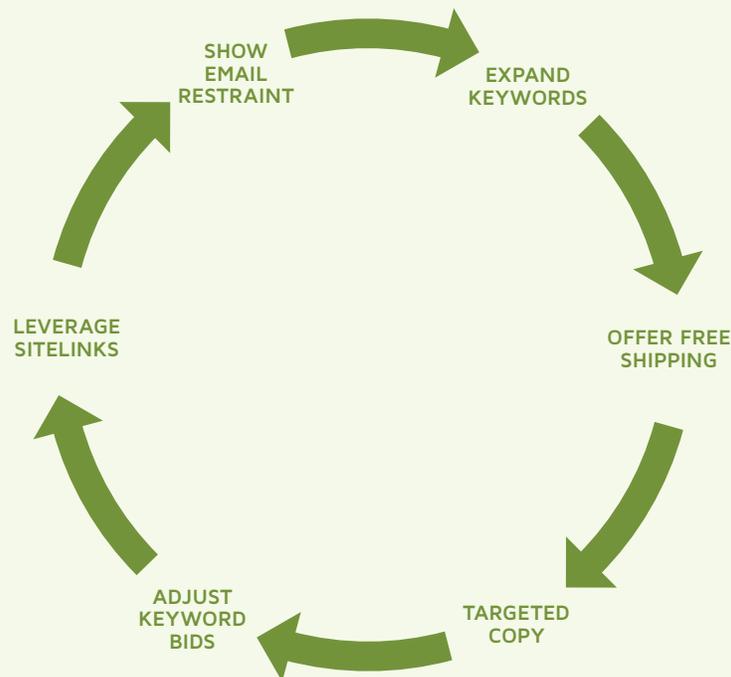


*Be brand-consistent in all your channels, especially when you are working through early-bird, peak, and last-minute strategies and messaging to capture maximum share. Your customers are in a hurry to buy and want to avoid confusion.*

ABNESH RAINA, FOUNDER, PLUMSLICE

A 2012 industry statistic showed that the top 500 retailers had a 77% share of the estimated \$198 billion U.S. eetailing market. That leaves 23% for everyone else, so you see why the competition for brand attention is so fierce and getting even more intense.

To rise above the din and capture your peak season share, we recommend that your marketing team take these actions:



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- ⚡ **EXPAND KEYWORDS.** Add early-bird, last-minute messaging, and deal-related terms to your keyword list. Create a list of top sales dates and consider purchasing related phrases such as “Black Friday” and “Cyber Monday” along with key product descriptions. Also be sure there is sufficient budget allocation for more keyword bids on high-volume shopping days.
  - ⚡ **OFFER FREE SHIPPING.** Start earlier with the offer, since online shoppers are buying earlier every year.
  - ⚡ **PUSH OUT TARGETED COPY TO REACH CERTAIN CONSUMERS ON CERTAIN DATES.** It helps get your ad noticed by those who tend to shop on a specific date, and it creates a sense of compelling urgency.
  - ⚡ **ADJUST BIDS BASED ON BEST-PERFORMING KEYWORDS.** Closely monitor search performance to improve clickthrough rate.
  - ⚡ **LEVERAGE SITELINKS.** Gain a competitive advantage by using sitelinks that appear under your paid search ad. Sitelinks provide more clickable areas within your ad and give you more real estate on the search page. Fine-tune them to target shoppers’ interests and create special landing pages in advance to promote special offers, holiday deals, special coupons, and free shipping.
  - ⚡ **SHOW EMAIL RESTRAINT.** Carefully consider the frequency and content of email messaging throughout the peak season. Avoid blasting subscribers multiple times over a short duration of time or with repeated messages. Instead, keep the emails focused, timely, and targeted with discount coupons or other incentives.

It’s a BYOD (Bring Your Own Device) world now. Research shows that nine out of ten consumers move between devices before purchasing a product or service. They may start a search on their smartphone and then complete the purchase later on their desktop.

Integrate BYOD into your marketing plan by these actions:

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**⚡ TARGET BY LOCATION.** If you have an online app or mobile customer loyalty program, you can send messages to users with GPS services enabled whenever they are in close proximity to your store. Pull them in by sharing a coupon or highlighting a special deal or sale based on the customer's shopping habits.

**⚡ TARGET BY CARRIER.** In international markets, it is common to purchase ads that are sent as a text message to all customers of a given wireless carrier. Use this service to highlight your special offers throughout the holidays.

**⚡ TARGET BY DEVICE MODEL OR OPERATING SYSTEM.** Based on market research, users of certain devices—Samsung or Apple—tend to share specific interests or behavioral patterns. Use this information to send targeted ads to specific mobile users.

For each of your promotions, you'll also need to make sure that the related promotion codes can be recognized across all channels, both online and offline. By advance planning now, you can improve peak sales.



*Social media allows us to behave in ways that we are hardwired for in the first place - as humans. We can get frank recommendations from other humans instead of from faceless companies.*

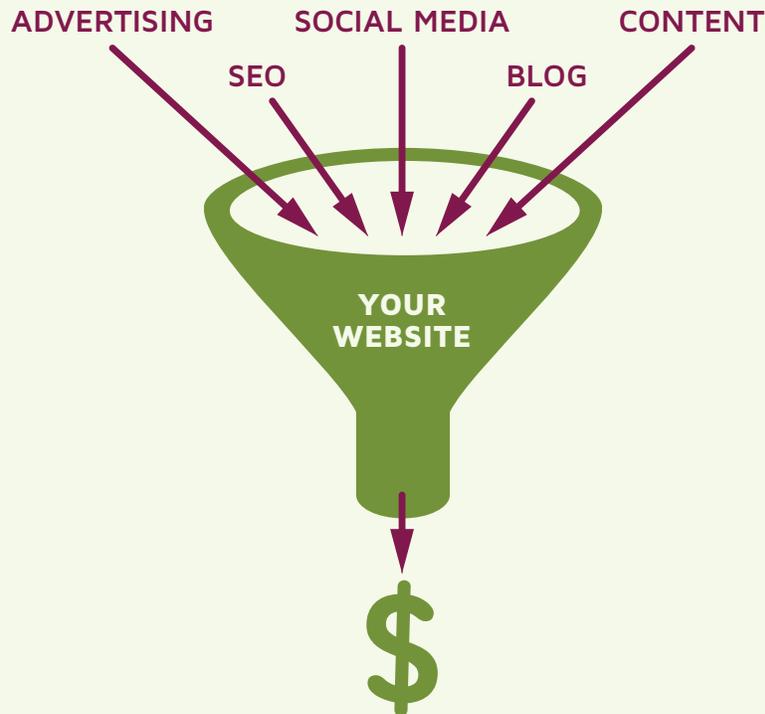
FRANCOIS GOSSIEAUX, *THE HYPER-SOCIAL ORGANIZATION: ECLIPSE YOUR COMPETITION BY LEVERAGING SOCIAL MEDIA*

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You may think the “faceless companies” notion a bit harsh, but this is the social media universe now. In parallel with PPC and mobile strategies, your social media team needs to plan for the onslaught of social media buzz that will accompany the next peak season. We at PlumSlice believe in engaging the consumer further upstream, via social media, to foster a sense of ownership of products long before they hit flash sale day.

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To harness the power of the social universe, we recommend these actions:



- ⚡ **STEP UP SOCIAL MEDIA ACTIVITIES NOW.** Grade your social media activities for customer engagement, interest, and relationship to other marketing channels. If it's less than stellar, consider staffing up so you can improve social outreach well before peak season.
- ⚡ **FIND THE RIGHT VOICE.** If your target customer is a Millennial, make sure your social media push has the right content and tone and will resonate with your customer.
- ⚡ **INCLUDE SOCIAL MEDIA IN ALL CAMPAIGNS.** Make sure to include your social media addresses in all marketing campaigns. It helps to reinforce your brand and connect you with specific customers who “like” a particular social media channel.
- ⚡ **BUILD A CALENDAR.** Create a social media calendar of all key traffic dates, promos, marketing campaigns, and so on. Then plan exactly what you will post, where you will post it (Twitter, Facebook, etc.), and when

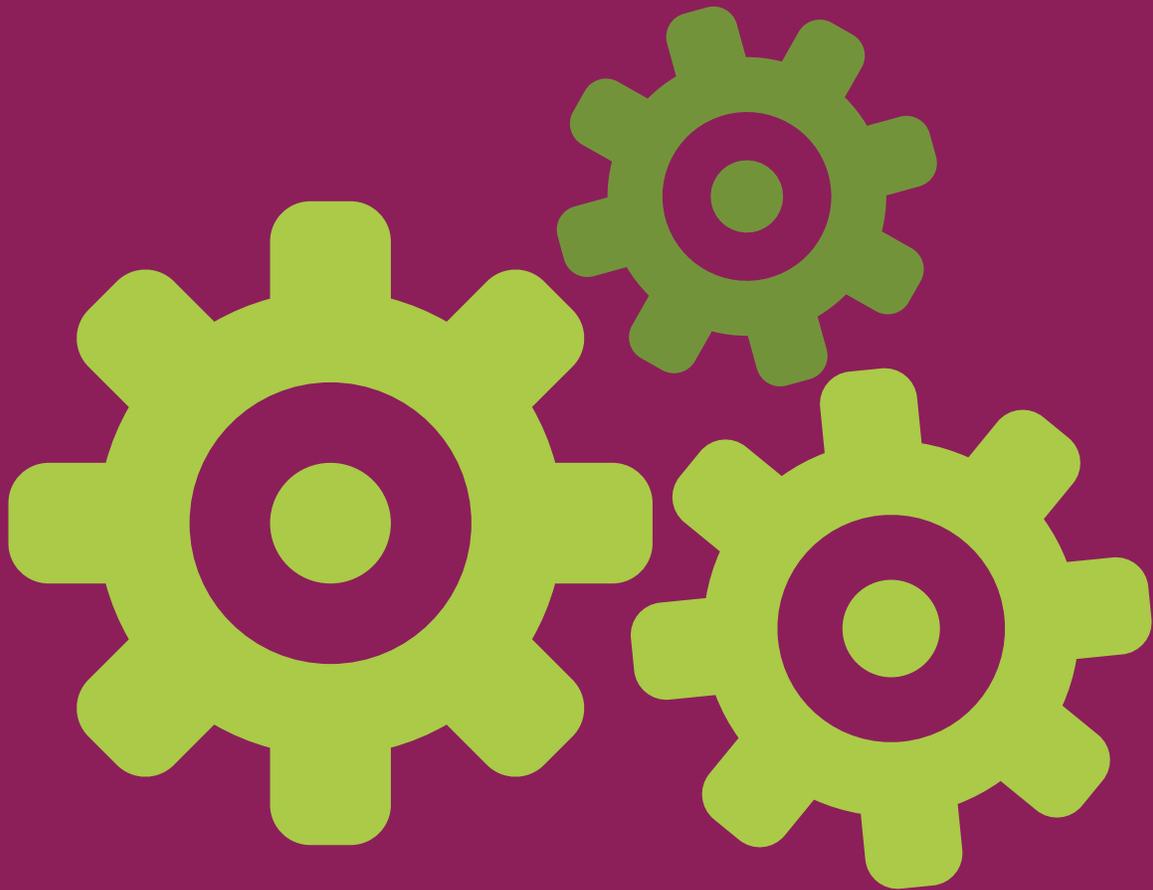
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you will post it. Your social media team should have copy written well in advance, tailored for each social media outlet and related audience.

**⚡ ENCOURAGE OPT-INS.** To increase the number of social media followers, provide special discounts or promotions to customers who like you on Facebook or follow you on Twitter or other channels.

# KEEPING THE WHEELS TURNING... IN ONE DIRECTION

OPERATIONS AND LOGISTICS





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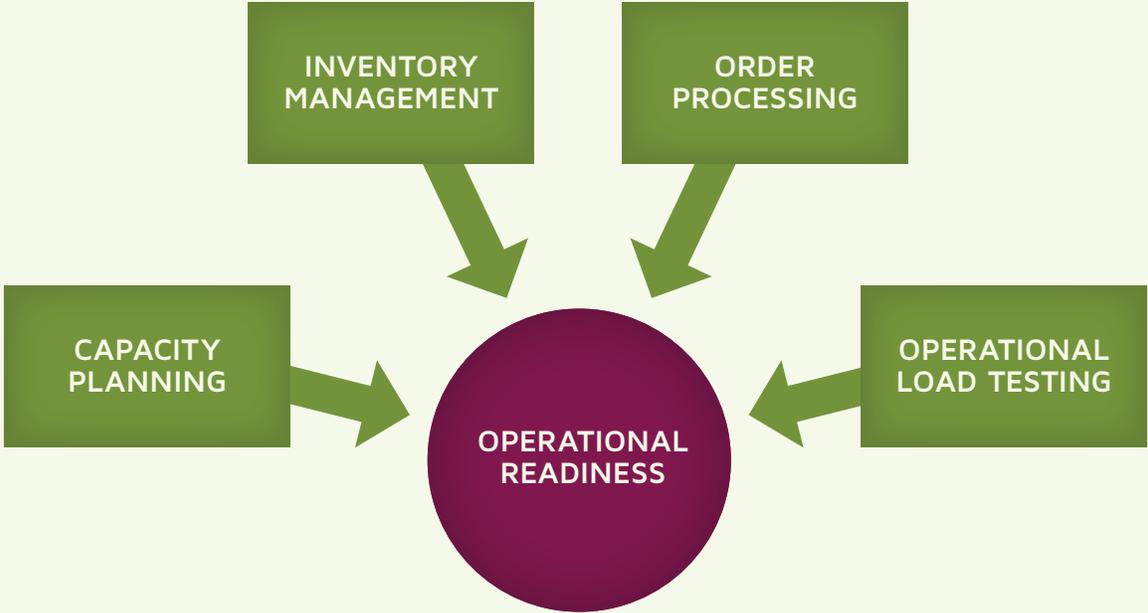
*You have a meeting to make a decision, not to decide on the question.*  
BILL GATES

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Think of a stadium on big game day. The gates open and a flood of people rushes in, full of excitement to see the next fun thing in their lives. Then picture some of the gates refusing to open. As a leader, you always have this concern: your ecommerce operation hiccups at the worst possible time during peak.

At PlumSlice, we consult with clients every day on operational tasks, using our experience to recommend improvements in site performance, investments in new technology, and a model by which to plan for the fluctuating traffic patterns typical of any site.

We recommend a holistic overview of your operation, taking a closer look at these areas:



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# CAPACITY PLANNING

This is the perfect time for you to review with your team the previous peak season's experience to identify areas of improvement and develop a "wellness" plan to prevent glitches this time around.

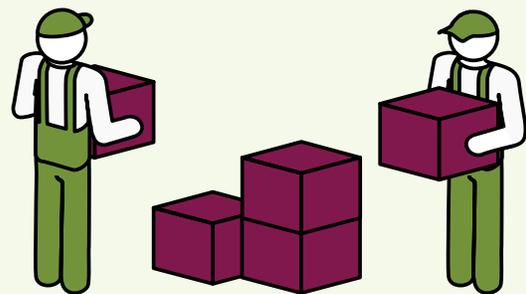
Questions to ask your team:

- ? Does the planned capacity sync up with merchants' sales forecasts?
- ? Which items may require a new item setup?
- ? What products can be consolidated with others for shipping?
- ? Are there products with special storage needs, such as refrigeration?
- ? Will you have sufficient outbound dock capacity based on expected inbound and outbound shipments?

By preparing for these issues in advance of shipment arrivals, you can reduce stress levels and maximize dock usage.

# INVENTORY MANAGEMENT

What's the one thing a shopper doesn't want to read during a busy buying time? *Item not available*. Effective inventory management requires making sure your team has enough stock on hand to keep up with demand while avoiding the inefficiencies of excess inventory.



Take some time to address these key issues with operations and logistic personnel:

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- ⚡ REVIEW OF LAST YEAR'S PERFORMANCE.** Ask your team for a cogent analysis of last year's peak sales and compare to this year's forecasts. Look for potential problems that you can address in advance. Did you have regular stock-outs of an item that you expect to be popular again this year? Or did you order too much of a different product that took up precious space and created inefficiencies? Talk with your staff to find out which decisions and processes worked well and which could use some improvement.
  - ⚡ DETERMINE MAXIMUM CAPACITY.** Operations should develop a map of current forward-pick, reserve, and remote storage locations. This gives a realistic picture of current capacity and then can be compared to demand planning and forecasting numbers. If you discover that you don't have the capacity to handle expected volumes, take action now to expand storage to support peak inbound loads.
  - ⚡ FINE-TUNE THE STORAGE PLAN.** Products in high demand and with high profit need to be in the closest, most accessible, least congested areas during expected peak periods. You should also consider if you want to set up remote storage for overflow or for a secondary inventory of your fastest moving holiday items. Now is also the right time to move products with lower expected demand farther away. You may want to move off-season stock offsite.
  - ⚡ ANTICIPATE PROMOTIONAL DEMAND.** Inventory managers must pay special attention to the storage and accessibility of seasonal best sellers and any items featured on your ecommerce site home page, catalog front page, or email marketing campaigns. You should also be ready to meet demand week by week, related to any promotional events or sales.
  - ⚡ GIVE SUPPLIERS A HEADS UP.** First, review any supplier issues that came up during the last peak season and determine ways to avoid the same problems this year. Then, once the inventory department has solid forecasts for the season, it's critical to share the numbers with suppliers so they can pre-plan for the anticipated number of orders. They may also have specific deadlines that your company will need to consider when placing orders. Additionally, volume discounts may impact decisions about order timing and quantities.

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# ORDER PROCESSING

Peak season customer purchases will push your order fulfillment systems and staff to their limits. Some advance planning and thinking—and cross-functional knowledge—can help reduce the pressure:

⚡ **CONSIDER PROMOTIONAL EVENTS.** All those involved in managing order processing need to be aware of planned promotional events, their timing, and items involved. They should have a usable, accurate calendar of these promos so they can brief staff in advance of each event.

⚡ **PLAN FOR SPECIAL AND EXPEDITED ORDERS.** Peak season buying naturally brings with it a flurry of special orders and expedited order requests. Managers need to determine in advance the amount of special handling your ecommerce operation can support without impacting other service levels. If you expect demand to exceed what you can comfortably deliver, consider hiring more staff or increasing your system capacity now—before the onslaught.

⚡ **SET BOUNDARIES.** The entire order fulfillment team needs to understand expedited order deadlines to set standards for handling these special requests. Managers need to establish a prioritization plan in advance, with processes in place for tracking special and expedited orders and procedures for informing customer service when numbers are nearing capacity.

⚡ **EXPECT UNEXPECTED EVENTS.** Stuff happens. Consider these scenarios and make sure your team has contingency plans in place:

- **WEATHER.** What if an ice storm prevents 30% to 50% of your staff from getting to your distribution center? Can you push demand to another center? If so, do managers have the information they need to determine at what point this should occur, how much demand to transfer, and what kind of orders to hold or transfer?



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- **CARRIER DELAYS.** Traffic accidents, bad weather, and road closures will all happen on critical days of the peak season. Fortunately, carriers usually have backup carriers, and most companies use multiple carriers. Find out now if this is the case. Also, encourage your managers to build relationships throughout the year to help smooth the way during delays. Discuss the options available to expedite an unscheduled pickup if another carrier drops the ball during peak periods.
  - **SYSTEM OR POWER OUTAGES.** Some managers will swear it's inevitable that a power outage will occur during the greatest peaks. Be ready by exploring what fallback options are available if systems need to be brought down or, worse, go down unexpectedly. Look at scenarios for two hours or less and for six hours or more. Make sure that your managers have a solid plan to deal with outages.

**⚡ COORDINATE WITH IT.** Your order-processing team also needs to mesh well with IT staff to understand any system downtime requirements during peaks. They can work with the IT department to schedule required downtime during expected slow periods. They'll also need to consider how system downtime windows will impact operations schedules, inventory data visibility, and reporting.

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# OPERATIONAL LOAD TESTING

Once there is a clear picture of projected loads, operations and logistics team leaders should check in with their managers to identify any concerns about current forecasts and planning schedules. It is also a good idea to remind them to coordinate daily maintenance tasks and system tuning so they won't conflict with expected peaks.

During these conversations, make sure that each fulfillment and support system is capable of supporting the anticipated loads:

**Warehouse management system**

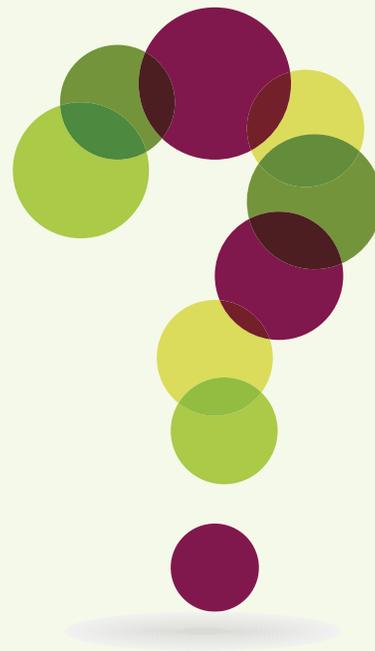
**Pick-to-light system**

**Radio frequency scanners**

**Inline scales**

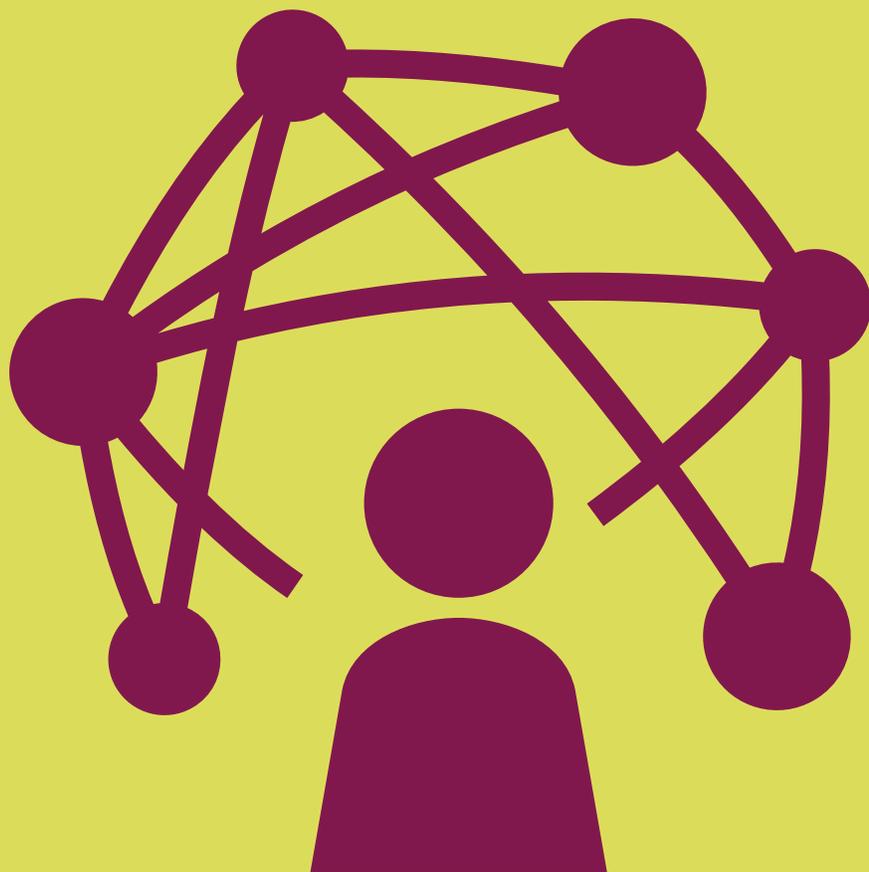
**Manifesting**

It's a good idea to run a simulated load testing prior to peak season. The extra effort and time invested now to flush out any bottlenecks can provide enormous payoffs later.



# FUELING COMMUNICATION & COLLABORATION

INFORMATION TECHNOLOGY (IT)

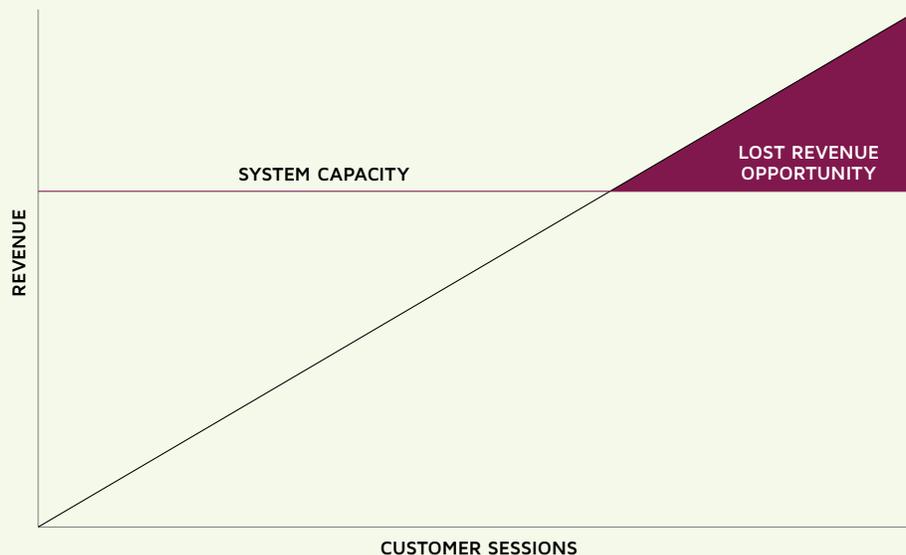




*The number one benefit of information technology is that it empowers people to do what they want to do. It lets people be creative. It lets people be productive. It lets people learn things they didn't think they could learn before, and so in a sense it is all about potential.*

— STEVE BALLMER

PlumSlice team members have built the IT infrastructure for major ecommerce sites such as Restoration Hardware, BestBuy, Louis Vuitton, Sephora and Gilt Groupe. We have lived, on a daily basis, all the pain and joy that comes with designing, implementing and supporting a world-class IT operation. We realize that peak buying periods add another layer of performance stress to the infrastructure and IT staff.



To make sure you're prepared for peak traffic spikes, we recommend treating peak-season readiness like any other major project. Begin by tasking your IT team to examine each part of your site architecture, as well as your IT infrastructure as a whole, to determine the scope of needed improvements.

These areas require scrutiny:

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Systems architecture  
Networking  
Applications  
Testing  
Monitoring

# SYSTEMS ARCHITECTURE

Your IT team should take these key steps to determine readiness for peak holiday loads.

**⚡ MAP YOUR SYSTEMS ARCHITECTURE.** Invest the time to create a detailed diagram of your entire system, including all of your servers, storage, applications, and networking systems. Include the following details to speed capacity planning analysis, system upgrades, and troubleshooting whenever problems arise:

- Makes and models of each hardware element
- Specifications for each device: CPU, RAM, storage, rated network throughput, ports
- Host names and IP addresses for servers
- VLAN groupings

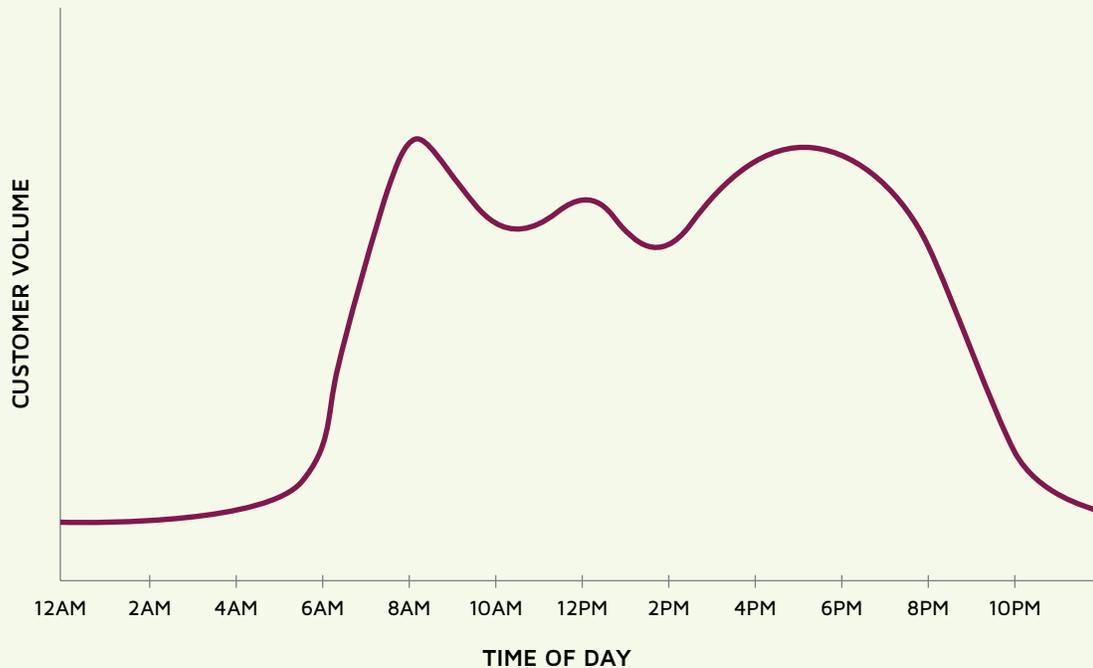
Once the system map is completed, the team can:

- Determine maximum capacity and whether the system can accommodate expected peaks.
- Identify bottlenecks, particularly wherever a component is significantly undersized, oversized, or imbalanced for its workload.
- Plan accordingly for any needed system expansion.
- Solve problems faster when they occur.

**⚡ DETERMINE ESTIMATED PEAK LOADS.** Analyze sales and traffic data from the prior year and forecasts for this year. Estimate the maximum number of customers you can expect on your site for each expected peak day, even each peak hour. Web analytics tools can help with a snapshot of traffic patterns, including the number of daily unique

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visitors, concurrent sessions, conversion rates, orders by time of day, bounce rate, and other useful metrics.

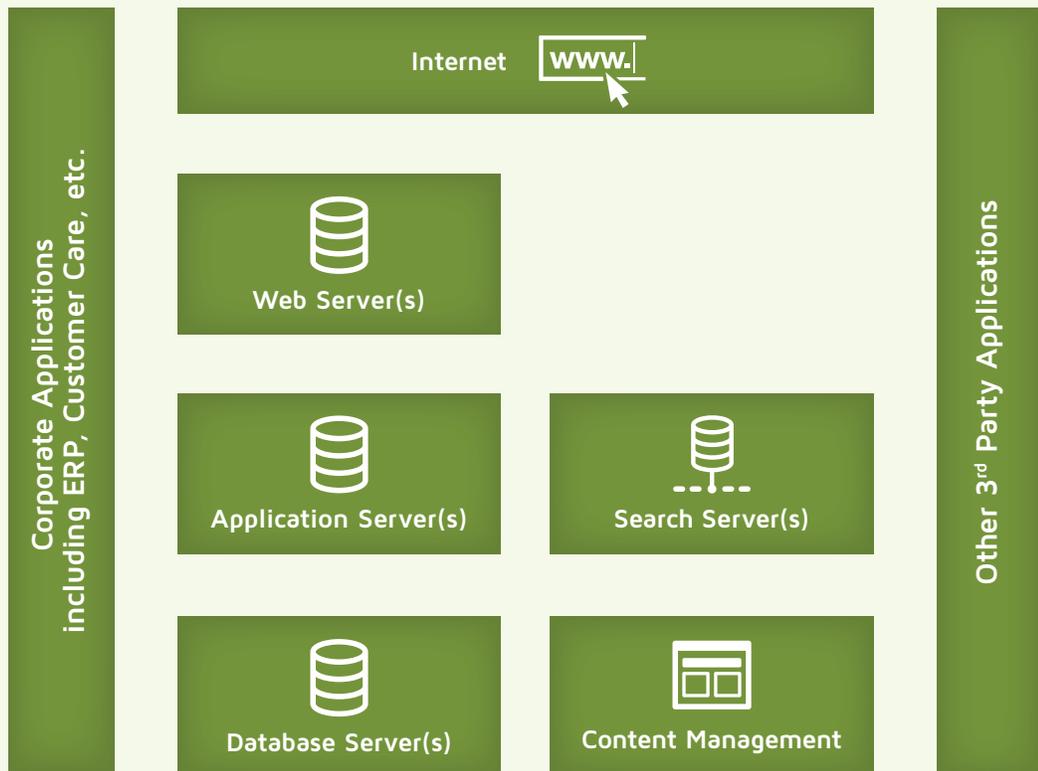


For example, based on your knowledge, you might determine that you will have between 8,000 and 10,000 customers visiting your site per day. But you know that traffic levels won't be the same every hour of the day. Do your best to estimate what these hourly peaks will be in order to forecast loads more accurately. Because forecasts are simply estimates, it's a good idea to pad expected peak demand numbers by 20% to 30% to be prepared for unpredicted bursts of traffic.

**⚡ CREATE A SYSTEM LOAD SCHEDULE.** This should include all regularly run reports, backend processes, data synchs and transfers, and backups. Compare this schedule against estimated peak loads to determine if you should suspend or delay any jobs. You may also decide to place certain processes under manual control to avoid system delays on peak days.

It's also important to communicate to staff the need to check site traffic before running resource-intensive jobs. Plan in advance to run these jobs on days when lower sales are expected.

**⚡ TUNE SERVER CONFIGURATIONS.** For each server, you need to first determine its physical capacity and configuration limits. It's also a good idea to ask experienced staff members if they've noticed any servers "running hot" or applications with sporadic performance issues. You should also review any performance issues that occurred during the last peak season and confirm whether they were resolved or still require trouble-shooting.



When you are ready, tune configurations for maximum throughput and minimum latency, paying special attention to these key assets:



- **WEB SERVERS.** Most web servers can be configured to accept a certain number of connections, typically determined based on available memory. Any connections beyond this number receive a "server is busy" message. While this solution may be acceptable during non-peak periods, it could limit potential sales during peak buying periods.

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Estimate the number of total users and page views expected at any given time. If you then find that your web servers won't be able to handle expected loads, reconfigure your servers, add more memory, add new web servers, or look to an on-demand hosting solution. You should be able to quickly procure a number of very inexpensive machines with moderate RAM and fast CPUs. They also often fit within a 1-U rack mount chassis, so they are especially easy to fit into your hosting facility.

- **APPLICATION AND DATABASE SERVERS.** The capacities of these servers—which host your catalog, cart, checkout, user accounts, point-of-sale (POS) and other key functionality—need to accommodate expected loads as well as the number of connections set for your web servers. Make sure these servers are configured correctly to avoid any conflicts. Key aspects to consider are tuning the number of worker threads, object and resource pooling (such as sockets and database connections), and caching optimization for object-relational mapping (ORM).
- **SEARCH SERVERS.** SEO and mobile search are critical to gain customer clicks during peak season. You should consider integrating dedicated search engines into your ecommerce architecture. If you do, it is important to test and monitor response time as well as CPU, RAM, and I/O usage.
- **OTHER SERVERS.** Depending on your environment, you may have other server types to monitor as well, such as specialized caches (memcached) and messaging servers. You will need to fine-tune configuration settings for each of these to maximize throughput and minimize latency. Remember to include these components when testing performance, as they often create bottlenecks.

**⚡ OPTIMIZE YOUR STORAGE.** For transactions to run smoothly, you need to have a well-designed storage system that can serve up and store data at desired response levels. Well before peak season, you should review the design of your storage strategy with a storage optimization professional. Consider the following points:

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- Get an idea of where bottlenecks may occur during peak loads. Determine in advance if you can live with performance degradations or take action to increase disk speed or capacity.

**⚡ IDENTIFY SINGLE POINTS OF FAILURE.** You can reduce the risk of



blackout or brownout by identifying all single points of failure across your systems architecture. Make sure you're considering all possible points of failure by getting several members of your team to consider the issue. Invite in a group of key staff members. Then ask them to review every component of your visual diagram together, asking these questions:

- ❓ Should the diagram of any component be broken down into smaller components?
- ❓ What happens if a given component fails? What is the greater system impact?
- ❓ What happens if this component cannot perform its tasks at any given time, particularly at expected peak moments?
- ❓ What happens to each component and the entire system if the power goes out? A key application crashes? A disk fails? A fire occurs?

By planning for a failure scenario, you can avoid downtime, but this typically comes at a price. You can achieve 99.999% (or higher!) availability through full redundancy, but most companies can't afford this level of protection. Estimate the potential losses of a given failure to determine if the ROI of redundancy is worth the price tag. You might decide to also use defensive coding, multiple geographic sites, or on-demand outsourcing services to provide the level of uptime appropriate for your needs and budget.

**⚡ INCREASE CAPACITY AS NEEDED.** Adding more hardware is often the first line of defense in increasing site capacity. Doing so without proper analysis can be financially unwise, however, and can even cause additional problems. In addition, during peak season, it will be next to impossible to add servers to your production pool through your normal procurement cycle, because every other company will be attempting to do the same thing.

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If you've discovered that your current IT architecture won't be able to handle expected holiday loads, consider these options:

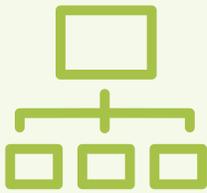
- **ADD ADDITIONAL SERVERS.** If it's clear you're going to need additional servers to meet expected demand, add them now. Make sure to consult your application and network diagrams and to configure load balances and other clusters to include the new servers.
- **FAST-TRACK UPGRADE PLANS.** If you know that your year-round traffic is on the rise and that you will need to upgrade or increase your number of systems soon, consider moving this schedule up to take advantage of increased peak season capacity.
- **UPGRADE SERVER CAPACITY.** Particularly in an emergency when you don't have time to bring a new server online, this course of action may be your best bet. Add make and model numbers, upgrade limits and current upgrade capacity to your architecture diagram. Two components can offer significant results very quickly: more RAM and more or faster processors. If you do update RAM, make sure applications can take advantage of it and revise configurations as needed to maximize performance. It's also prudent to have clear configuration management policies and procedures in place to reduce the risk of errors that can happen when upgrades are done under stressful conditions.
- **MOVE TO AN ON-DEMAND MODEL.** If you have broad swings in demand throughout the year, a great way to have peace of mind as traffic increases is to have a contract in place with an external vendor to ramp servers up or down as needed. Make sure your service level agreement meets your needed timeframes for adding additional capacity.
- **CONSIDER A CLOUD MODEL.** Virtual servers offer considerable flexibility, enabling you to reallocate resources on the fly. This can allow you to better manage loads across applications. Some virtual machines also allow systems to be migrated—while running—to another physical server, making server

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expansion a seamless process. Good cloud hosting providers can load-balance servers so that you do not have to worry about slowdowns during peak traffic.

- **STANDARDIZE.** If you haven't already, you may want to move toward standard hardware configurations for future efficiency gains. Hardware standardization can also help you address problems more quickly. You'll be more likely to have the correct part on hand for needed repairs, and your technicians will repair your equipment more quickly.
- **REALLOCATE HARDWARE.** In an emergency, you can press other hardware—including staging, QA, and even development servers—into service to absorb bulk load.

## NETWORKING



Quite often, the biggest system constraint is not the servers themselves but server access. Servers need to access each other, the outside world, and distributed or shared storage. Have your IT team create a visual diagram of all your network devices and the connections between servers. You'll also need to determine redundancy levels for your networking infrastructure.

**⚡ FINE-TUNE NETWORK COMPONENTS.** Note maximum capacities, look for any bottlenecks or conflicts when compared to server capacities, and fine-tune these components as needed:

- **ROUTERS AND SWITCHES.** Make sure these components are up to date on patches. This often-overlooked procedure can help reduce packet loss.
- **LOAD-BALANCERS.** Make sure loads are distributed evenly and only to available servers. Also remember to add any new servers to the resource pool so they are sure to be used.
- **FIREWALLS.** Consider increasing inbound loads and limiting outgoing connectivity to the bare essentials. You may also want

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to review Access Control Lists and possibly remove old ACLs that could be impacting performance.

- **CABLING.** Often neglected, cables can impose serious performance constraints. Make sure they aren't pulled, crimped, tripped over, or otherwise damaged to reduce interference issues. You should also review whether various networking devices must be connected to specific kinds of cable for maximum throughput.

## APPLICATIONS



The first step is to have the IT team develop a visual diagram of a logical application model. Once the map is ready, have them examine each application to determine where they may be able to increase performance. As the team considers any changes, make sure they take the holistic view in relation to the entire IT infrastructure. Putting too much stress on one area could cause another bottleneck elsewhere, possibly even resulting in application failures.

Your team should take a close look at performance metrics and take the following actions as necessary:

- ⚡ **TUNE YOUR APPLICATIONS.** Look at improving the performance of your business applications that support your catalog, cart, checkout, point-of-sale (POS), user accounts, and other functionality.

Depending on how your ecommerce platform is implemented, you may have a broad array of options available to you. In general, the biggest gains can come from caching. You may be able to cache just about any object in the system, including products, SKUs, pricing, inventory, content, profile data, and even page fragments. Determine your operation's tolerance for stale inventory, pricing, and availability information, and plan accordingly. You should also pay attention to your cache miss rate. A good rule of thumb is to allocate sufficient RAM to increase your cache hit rate to 95% to 99% for heavily used objects. Although cache can be expensive, the ROI is considerable.

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**⚡ TUNE YOUR DATABASE.** If you are using the out-of-the-box configuration, you may be getting as little as one tenth of your database's optimal performance. Rectify this by working with your database administrator (or consulting with one) to tune settings to your specific needs. Key settings to consider include: effective memory usage, I/O performance, listener count, cluster optimization, table partitioning, and index definition. You should also make sure that you have enough RAM for your performance needs. If performance still seems off, look at memory-related settings such as system global area (SGA) and program global area (PGA).



**⚡ TUNE JAVA APPS.** There are many ways to tune Java applications, but some of the basics involve optimizing garbage collection (GC) by minimizing full GC cycles and choosing a concurrent GC policy, setting the maximum heap size correctly, and ensuring that you are using the `-server` flag. Depending on your platform, there may be optimized Java Virtual Machines that can offer additional performance improvements.

**⚡ REPLACE APPLICATIONS AS NEEDED.** At times, your best option is to retire or replace your applications. For example, you will want to look at any available upgrades of your database, application, web, and search server software. Sometimes it is best to stay put, but quite often new releases offer significant gains. You should also look at upgrading or replacing your JVM, Ruby VM, PHP engine, or operating system to be more efficient. However, with any upgrade, compatibility issues may arise, so approach this sort of change as you would any major change. If there are no upgrades available or if the applications you have are at the end of support life (EOSL), consider replacing them with more efficient alternatives.

**⚡ IMPROVE YOUR CODE.** Use browser testing extensions to determine what components may be delaying content presentation. By making your code more efficient—for example, by reducing DNS lookups, avoiding redirects, and removing duplicate scripts—you can improve page performance significantly. Work with an intermediate or senior web developer to identify what changes to make.

**⚡ SEEK ADDITIONAL PERFORMANCE IMPROVEMENTS.** There are many other things your IT team can do to improve application performance, particularly when your site is under extreme load:

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- Use a profiler to find hotspots in your code.
  - Add safety valves to disable or reduce computationally expensive functionality.
  - Shorten session idle timeout to free up resources.
  - Disable calls to failing or slow-functioning systems.
  - Disable heavyweight search operations.
  - Queue a backlog of batch operations to run after the crisis passes.
  - Create a waiting room when your system reaches maximum capacity, informing new customers to try again later. Although this is not ideal, it's better than the conversion drops that will result from a blackout or brownout.

Before making any changes, remember to engage with your QA department so they can establish proper functional test plans before any updates go live. At a minimum, your QA team should be informed of the components affected so they can assess related risk.

## TESTING



Your team not only needs to do a capacity test but also test the system whenever changes occur to make sure nothing breaks. A simple entry of incorrect characters in a new product's price can bring a system down—and testing can prevent this from happening. This is a particularly important task for new ecommerce operations that have not yet stood the test of time.

To prepare for peak traffic, consider these testing suggestions:

- Create a run book of 50 test scripts of the most common and critical business processes, such as customers accessing product pages and adding items to their shopping cart. These test cases should represent real-world examples of how people typically interact with your site to help prevent problems when an application update goes live.
- Conduct performance testing to identify any system bottlenecks and stress testing to determine maximum load capacities. When conducting

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load testing, check to see if the system can endure a sudden spike. Accelerate ramp-up time to find out how the site responds when there is very little data in the cache and all of the application instances need to consult the database at the same time, possibly causing a lockup or outage.

- Keep in mind that any testing done in a non-production environment may not perform live in exactly the same way. If you choose to test instead in production, consider isolating changes only to performance enhancements so you can roll back the entire build if it ends up having an unacceptable regression. To get a clearer picture, resist tying business functionality to a performance release.
- Do production testing in the late evening or whenever your site is least active. Consult site analytics reports to see when the fewest shoppers are on the site. You may choose to show visitors a maintenance page during your test, or you may choose to leave the site open to nominal traffic but risk customers having a negative shopping experience.
- Recognize that it is unlikely your team will be able to conduct tests on external systems, such as payment processing and fraud screening systems. Discuss updates you are making with your service vendor to determine if any known conflicts exist.
- Remember to test search capabilities, which now often drive 10% to 25% of sales. Because search often involves either a call to a third-party system or a complicated database query, it is critical to test this component.

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# MONITORING



Your ecommerce operation is ready for prime time and peak buying. Now the last critical piece: having tools in place to monitor site performance. Ensure that they can pull traceable and actionable information from your systems using protocols such as SNMP or JMX. It's also a good idea to instrument your components so they maintain a "health check" value that can be used for alerts.

**⚡ INCREASE MONITORING EFFECTIVENESS.** Have your team take these actions to upgrade monitoring:

- ⚡ Because a healthy log is a clean log, make sure that the proper information is entered in the appropriate log. Developers get into the habit of putting a lot of debugging output in their logs. Once systems are moved to production, though, this output should be confined to a debug log setting. A cleaner log lets your operations staff and development engineers more easily identify any potential problems.
- ⚡ Get a feel for what you see as the normal behavior of the system, and keep an eye on it. Note these behavior trends in your operational run book. This will enable you to refine your monitoring and alerts as you become more comfortable with the safe operating parameters of the system.
- ⚡ Provide open access to the monitoring dashboard. Let everyone see a real-time display of the health of all of the systems through an internal website. When people outside the ecommerce engineering team can see that the system is being actively monitored, it can reduce time-consuming anxiety and status questioning.
- ⚡ The monitoring software you use should have the ability to send alerts based on activity parameters and any outages. Make sure to set an alert at 85% of assessed capacity and your maximum acceptable response time. This will allow you to get a jump on any problems as soon as they start to occur. You should also have a clear action plan for resolving any alert.
- ⚡ Consider holding stand-up meetings to promote increased communication among engineers and to help build a shared knowledge of the

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type of things that can go wrong and how to resolve them. When all is running smoothly, the meetings will be very short. When fires need to be put out, meetings become longer, with staff putting their heads together to diagnose and fix the problem. Holding these meetings regularly brings home the fact that keeping the production system running, stable, and responsive is the highest priority for your IT team.

**⚡ INFORM OTHERS OF ANY SYSTEM ISSUES.** It is important to understand that at the end of all calculations and analysis, the resulting figures are only estimates combined with assumptions. Demand and traffic can be higher or lower than projected, sometimes by a wide margin.

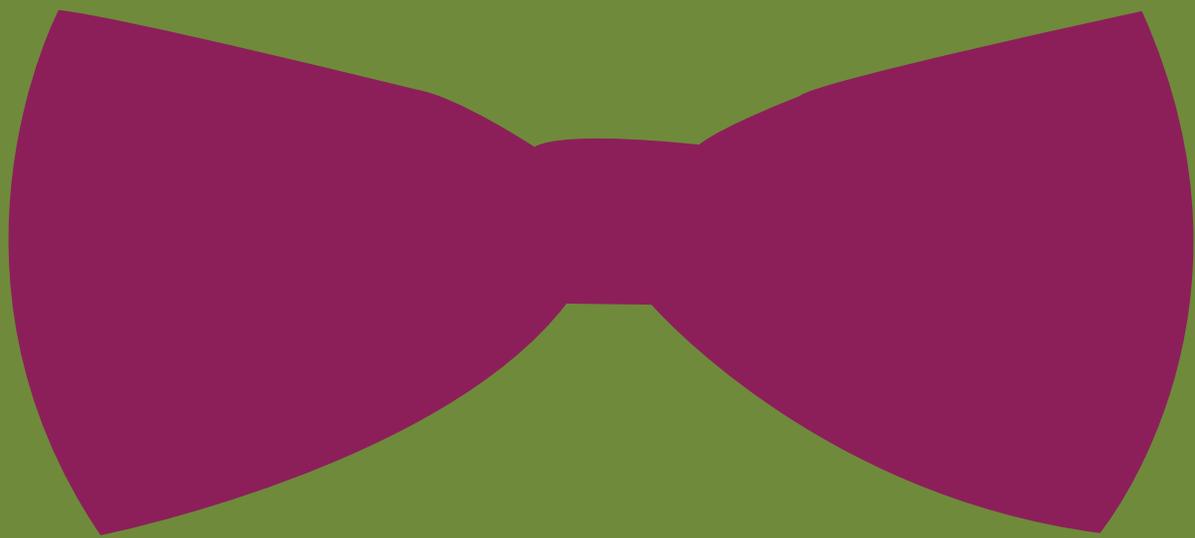
If your ecommerce site does slow considerably or even fail, communicate the problem to site visitors by presenting a simple browser page such as the following: “We are experiencing technical difficulties. Please try back later.”

You will also need to immediately share slow or failed system status with other departments. To reduce internal concerns and contain status questioning, have a single source share all status updates. The updates should include the current system status, actions attempted by the technical team, upcoming technical team actions, and the next expected update time.

Depending on the popularity of your site, some service failures may result in press and blog coverage. If this is the case, be sure to inform your company’s communications team about the nature of possible problems, which could include extended outages, massive data loss, security penetration, or privacy violations. Take proactive steps that will help inform your consumers.

# DRESSING IT UP

MERCHANDISING





*Advertising moves people toward goods;  
merchandising moves goods toward people.*

ADVERTISING HALL OF FAME MEMBER, THE LATE MORRIS HITE,  
WHO HELPED LAUNCH DORITOS, DR. PEPPER,  
AND HAGGAR SLACKS, AMONG OTHERS.

People like shiny new cars for a reason. How much of a turn-on is a primer paint job? Take a look at automobile websites like Infiniti. Pretty sexy, right? Now go to your website. Is your first impression one of appeal, excitement, attraction? Does it make you want to start clicking around, or does it look like a stale repeat of similar sites?

That's merchandising: giving your customer a compelling enough site experience to keep them engaged, clicking, shopping and buying!

There are a number of merchandising issues to consider that can help increase customer awareness and interest in your products:

- ⚡ **GLAM IT UP.** Revise your website long before peak season so that it is as appealing as possible to your target customer(s). Have your marketing and merchandising team meet with website designers and create a schedule of improvements from now until peak season. Websites always take longer to build than anticipated, so start as soon as you can.
- ⚡ **USE LAST PEAK SEASON AS BASELINE.** Your marketing team should be able to provide analytics on the volume of sales generated by various channels and how the website itself fared in the omnichannel marketing mix.
- ⚡ **LOOK AT PRODUCT PLACEMENT ON YOUR SITE.** Are you positioning hot items and special offers on the correct pages for maximum click-through and conversions? What products could you showcase during the checkout process to promote increased sales? Also, be sure these offers are integrated with social media.

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**⚡ RE-EXAMINE YOUR CUSTOMER INTELLIGENCE DATA.** Is there a new market segment that has just discovered your site? Maybe you need to add more landing pages or segmentation so customers can get to the pages that are the best fit for them.

**⚡ OFFER GIFT SUGGESTIONS.** Not everyone is a born shopper. Gift suggestions can also encourage power shoppers to take care of numerous gifts in one transaction. When you provide gift suggestions, consider offering products at similar price points, within a themed category, or based on what similar customers purchased.



At PlumSlice, our mantra is *collaborate and communicate*. Be sure to engage all customer-facing associates with your vision of peak season product sales. They need integrated product information at their fingertips that syncs up correctly with site information to help them be cheerleaders for your products and credible voices to the ultimate consumer.

# HAVING A PERSONAL TOUCH

CUSTOMER CARE





*The customer is always right.*  
EARLY USE ATTRIBUTED TO MARSHALL FIELD'S  
AND SELFRIDGE'S DEPARTMENT STORES.

Your customers want to make purchases and get answers fast during peak season buying. More often than not, they're on their smartphones doing several other things at the same time.



When the phones start ringing, you'll want to be sure that you have enough trained agents to answer them. PlumSlice recommends you ask your team these hard questions to ensure customers end their calls with a feeling of satisfaction:

- ❓ What successes can you build on from last year?
- ❓ What problems have you identified?
- ❓ Will you hire some extra seasonal workers to mitigate attrition issues?
- ❓ Will you use other staff members in an "all hands on deck" situation to cover peak volumes? If so, have you made arrangements to train them quickly and relieve them from their other responsibilities at these times? Or do you have an outsourcing partner ready to tap?
- ❓ Do you have detailed documentation of your call center processes, including how to correctly route calls, answer questions, and resolve any problems that might arise?

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- ❓ Do you have a training plan based on this documentation for fast onboarding of new staff, if needed?
  - ❓ Are staff members seated in functional teams with sufficient work space?
    - Do you have sufficient workspace allocated for staff training?
    - Do you have a seating map by week, by day, and even by shift?
    - Can you use home agents or outsource if you have insufficient space?
    - Will you need subject matter experts as floor walkers to provide technical or process expertise to new staff members?
  - ❓ Have experienced management, supervisory, and agent staff been scheduled to ensure that sufficient expertise is available to guide staff and handle any problems?

Beyond your call center staff, you need a call center system capable of handling high volumes and proactively reducing inbound volume. Make sure your system can do the following:

- ⚡ Scale to handle expected peak traffic levels.
- ⚡ Reduce inbound volume through:
  - Proactive automated calls, emails, and text messages that provide order confirmations and status updates
  - Automated announcements that answer common basic questions (such as store hours and location) and direct customers to online self-service options
- ⚡ Manage inbound volume more efficiently by:
  - Routing basic calls about product availability to less-skilled staff members and more advanced calls such as custom orders or refunds to more-skilled staff members.
  - Offering web chat.
  - Providing call-back options.
- ⚡ Inform customers of expected wait times to reduce frustration.

You may also want to consider expanding service hours to help reduce daily peaks and wait times.

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## IT'S A **WRAP**

Peak season buying and the demands on ecommerce operations have changed forever. The advent of mobile, social and omnichannel marketing throws the gauntlet down to ecommerce leaders. You must achieve profitable ROI and marshal your team to deliver and perform in a complex environment.

It can be done. This game plan is the start. Refer to it regularly and pass on its ideas to your team members. Remember, customers still have the basic need to shop and seek satisfaction. They want to buy. That's why they're on your site. Help them to do so.



# WE'RE ON YOUR TEAM

After working in retailing for a combined 70-something years, PlumSlice's retail warriors have painfully experienced all the things that can go wrong in getting a product from the design phase to the customer's front porch. Our team of ecommerce veterans come from places like Restoration Hardware, Williams-Sonoma, and Best Buy, to name a few.

We left brand-name retailers and founded PlumSlice to help etailers avoid the product pitfalls we saw and bring the best products to market faster. For the past few years we have consulted to etailers, advising them on technology investments and ecommerce processes and enabling them to be more effective in reaching the consumer online.

We have developed a cloud-based software solution that solves some of the major product pain points for etailers. We have taken the core processes and added what you need to be successful today. You could call it *product engagement*—a solution that enables more collaboration between all those involved in making a product and more powerful interaction with the consumer.

## CALL US FOR HELP WITH:

Peak season planning  
Innovative product management  
Cloud computing solutions  
Ecommerce implementations,  
review, and support  
Custom software development  
and support

## JOIN OUR BETA GROUP:

PlumSlice software is now  
available for beta trials. Sign up  
at [www.plumslice.com](http://www.plumslice.com).

# PlumSlice

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