CUSTOMER SUPPORT

A GUIDE TO PEAK SEASON SUCCESS

Manhattan Associates®

A GUIDE TO PEAK SEASON SUCCESS

PROVIDED BY THE MANHATTAN ASSOCIATES
CUSTOMER SUPPORT ORGANIZATION

Over the years, Manhattan Associates has compiled an extensive archive of consulting experiences, best practices and technical recommendations. Rather than keeping all that knowledge in-house, we make an ongoing effort to offer our expertise to our valued customers.

This guide will guide you through the different considerations involved in planning for your peak seasons. Being appropriately prepared is important for many reasons:

– Volume may be forecasted to surpass the original design assumptions

– Additional functionality may have been added since Implementation

– You may have opportunities to implement industry best practices

– Optimization of system settings may be beneficial if tuning has aged

Email **inquiries@manh.com** to learn more and discuss the level of Manhattan assistance that is appropriate for your peak readiness needs.

CONTENTS

Manhattan Associates is available to assist throughout planning, execution and support of peak season activities. We encourage you to take advantage of our expertise wherever and whenever it is needed.

INTRODUCTION

We at Manhattan Associates understand and appreciate the importance of peak season to your business and to your customers. The key to a successful peak is early planning and ensuring that the right experts are involved in every stage of preparation.

Without adequate preparation, your operations and systems might not be ready to cope with unexpected variations in demand or newly introduced application functionality. You might also miss out on opportunities to take advantage of application tuning and other best practice recommendations that come with Manhattan's deep experience and expertise in this area.

Manhattan Associates is available to assist throughout planning, execution and support of peak season activities. We encourage you to take advantage of our expertise wherever and whenever it is needed. This may vary from a simple walk-through of this document to a services engagement to implementing design changes, performing volume testing and providing dedicated on site or remote support.

As you progress through peak readiness activities, it is important that any resulting action items be documented and run as a project to ensure all tasks, many of which can be time-intensive, are completed well before your critical high-volume period. We recommend that you consult with Manhattan as part of the careful development and execution of the planned project.

Email **peaksuccess@manh.com** or contact your Manhattan Support Manager to learn more and discuss the level of Manhattan assistance that is appropriate for your peak readiness needs.

STRATEGIC PLANNING

1.1 FORECAST PEAK VOLUMES & NEW BUSINESS REQUIREMENTS

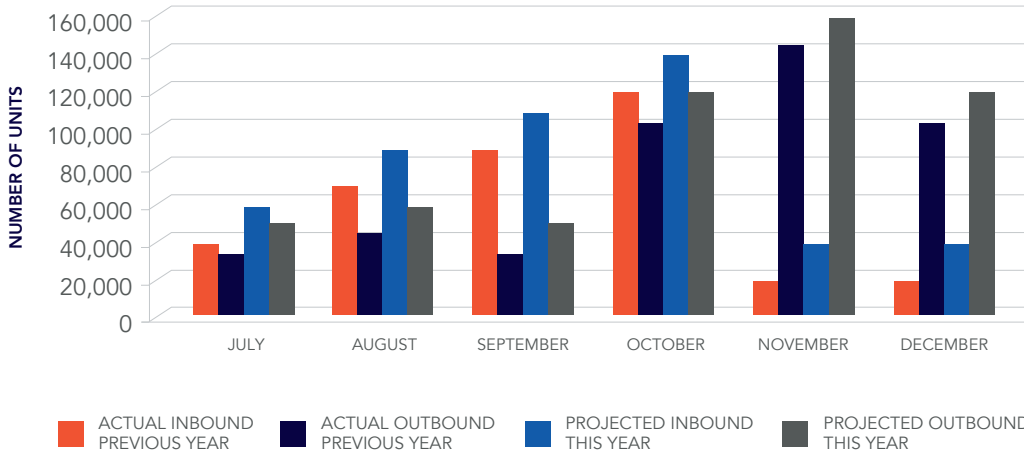
When planning for peak season, it is helpful to collect historic and forecasted volume data as well as the expected peak season timeframe(s). See sample graphic to the right. After collecting this data, it should be communicated to key stakeholders.

Similarly, any new business or operational requirements for the year should be accounted for and planning should start now. This could include:

– Enabling new e-com business
– Major operational changes like integrating with a new unit sorter
– Adding a new parcel carrier

PEAK SEASON PROJECTIONS

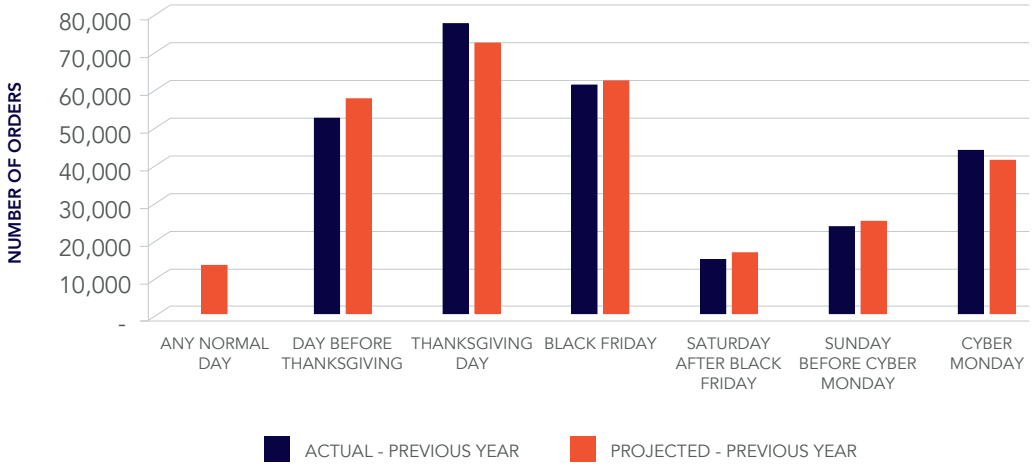
HISTORICAL AND PROJECTED INBOUND / OUTBOUND VOLUMES



This is a sample only. Each customer must decide on their key metrics (i.e., MHE, number of users, % of singles, VAS, etc.).

VOLUME FORECAST ACCURACY

ACTUAL AND PROJECTED ORDER FLOW INTO ORDER MANAGEMENT



This is a sample only. Each customer must decide on their key metrics (i.e., volume projection based on seasons and promotion).

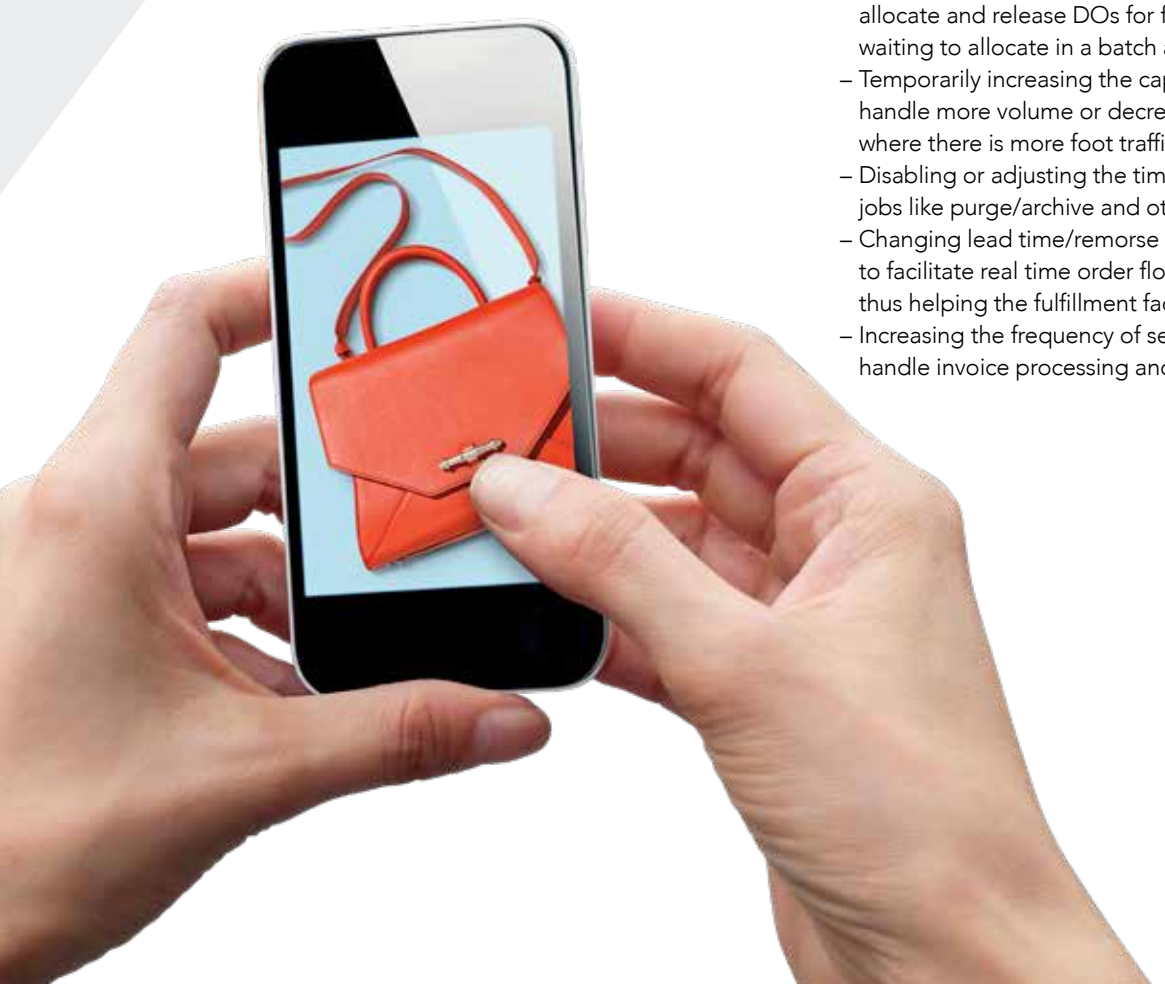
1.2 ASSESS PREVIOUS YEAR PEAK SUCCESSES AND OPPORTUNITIES

It is recommended to have a review session to assess the previous season. This helps in determining the factors that enabled a successful peak and in identifying any opportunities for this year.

1.3 ONSITE OPERATIONS REVIEW

One of the first steps during peak season planning is to contact your Support Manager to schedule an on-site Operations Review with your designated Operations Advisor. A Manhattan design lead, working closely with your Manhattan support team, will partner with stakeholder groups across your organization, including operations, infrastructure and ERP to maximize your potential across key areas like productivity, throughput and visibility. Please find a few of the areas where our Manhattan's Operations Advisors can help plan for your peak season.

Working with your Operations Advisor is one of the first action items in getting ready for peak season.



1.3.1 IDENTIFY PEAK SEASON SPECIFIC OPERATIONAL STRATEGIES

A discovery and/or design session should be held to determine if altering operational strategies might be beneficial during peak season. The current functional flow may be adequate under normal volume, but a revised strategy may be necessary to optimally handle increased volumes.

Some options to consider in Warehouse Management include:

- Reviewing replenishment strategies if changes in volume impact DC traffic (i.e., picking versus replenishment traffic)
- Improving flow-through efficiency by shipping ASNs as full orders to reduce pick, pack and ship processes (distribution orders can then be coordinated up the supply chain)
- Review the rate at which LPNs are introduced into the flow from receiving, cross docking, warehousing, picking, VAS and staging to identify potential bottlenecks caused by increased volumes; adjust operational strategies or labor as needed
- Review special shipping/parcel considerations given the additional volume (set up of new services, obtain additional tracking numbers, etc.)
- Evaluate singles flow and bulk pick strategies to support heavy promotions
- Planning for temporary workforce. For more details, please see Section 3.4
- Operational dashboards setup to aid Operations during Peak
- Some options to consider in Order Management include:
- Reviewing allocation, distribution or waving strategies for fast moving items. You may want to immediately allocate and release DOs for fast moving items instead of waiting to allocate in a batch along with other items
- Temporarily increasing the capacity of the stores that can handle more volume or decreasing the capacity of the stores where there is more foot traffic during the peak season
- Disabling or adjusting the timings of process intensive jobs like purge/archive and other external system jobs
- Changing lead time/remorse period in Order Management to facilitate real time order flow to fulfillment facilities thus helping the fulfillment facilities to plan better
- Increasing the frequency of settlement runs to effectively handle invoice processing and peak volume

1.3.2 IDENTIFY PEAK SEASON SPECIFIC FUNCTIONAL FLOWS

Peak season preparation does not just mean preparing for additional data volume. It can also require special operational considerations, such as the use of specific functionalities or processes. It is important that these special flows be identified, documented and tested in advance. Work with our Operations Advisors to identify operational flows which will better equip you for the upcoming peak.

Here are a few Warehouse Management examples:

– A grocery distributor may use a rarely invoked option when shipping turkeys before Thanksgiving
– A home improvement retailer may depend on a unique process to ship supplies during hurricane season
– A wholesale apparel/footwear distributor may rely on shipping directly to retail stores during back-to-school
– A direct-to-consumer distributor may need to prepare for additional VAS capacity during holiday season

It is important that special flows be identified, documented and tested in advance.

Here are a few Order Management examples:

– An apparel/footwear distributor may increase the watermark levels for inventory at the stores to avoid disappointments to the customers visiting stores
– Some retailers may want to consider additional shipping options to ensure free and fast shipping during the holiday season
– A grocery distributor may change the allocation strategy from backorder to cancellation if he is unable to fulfill all the demand for turkeys in time before Thanksgiving

1.4 DEVELOP THE PLAN

This preparation overview can be used to review and build out the details of the plan internally or in cooperation with other partners (including your Manhattan representative). Once the details for each phase and department are documented and timelines are set, the plan should be agreed upon by the various action item owners and key stakeholders. The finalized plan should also be communicated to Manhattan Associates to initiate any associated services engagements and to make your representative aware of key action items.

Find below a recommended project plan that ensures that you are ready for your peak season.

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
STRATEGIC PLANNING	ONSITE OPERATIONS REVIEW			●									
	DEVELOP THE PLAN			■	■								
EXECUTION	SOLUTION DESIGN & DEVELOPMENT					■	■	■					
	IMPLEMENT NEW OPERATIONS / FLOW STRATEGIES						■	■	■	■			
VALIDATION	VPT						■	■	■	■	■		
	SURECHECK AUDIT								■	■			
READINESS	CODE & CONFIGURATION FREEZE										●		
	PEAK SPECIFIC ADMIN SETTINGS										■	■	
MONITORING & SUPPORT	PLAN PEAK SEASON SUPPORT								●				
	DEDICATED PEAK SUPPORT											■	■

EXECUTION

2.1 DESIGN AND DEVELOP SOLUTIONS TO SUPPORT PEAK SEASON

The Onsite Operations Review by the Manhattan Operations Advisor might identify the need for new configurations, new flows or even new extensions to accommodate peak specific operational flows or strategies. Designing and developing these solutions should be one of the first action items in getting ready for the peak season. Make sure you work with the Operations Advisor and your dedicated support team to get these completed well ahead of time.

2.2 HARDWARE SIZING & INFRASTRUCTURE CONSIDERATIONS

System Administrators should validate several hardware and Infrastructure considerations when planning for peak season:

Understanding the new solutions required for a successful peak season is of utmost importance.

2.3 IMPLEMENT NEW OPERATIONS FLOW OR STRATEGY

The implementation of any recommendations that come out of the Operations Review process should be initiated during this phase. As mentioned above, this could include any peak season specific operational strategies, functional flows or new dashboards/reports. Manhattan's Operations Advisors and support teams shall continue to work with you to ensure that these recommendations are finalized, tested and implemented well ahead of peak season.

2.4 CREATE NEW DASHBOARDS AND REPORTS

The fast-paced environment during peak season may require additional operations tools to manage increased workflow. Peak season dashboards and reports can be instrumental in helping to manage operations during this time. Consideration should be given to reducing impact on the system for resource intensive reporting. This includes performance tuning reports and minimizing the number of reports run in an on-demand manner. Our Operations Advisors can work with you in developing meaningful dashboards and reports that will help you make quick business decisions during the peak season.

VALIDATION

3.1 VOLUME PERFORMANCE TEST PLANNING

A volume performance test (VPT) is recommended when volume is expected to surpass the original design assumptions. It is also suggested if functionality was added after previous volume tests. Testing can be system-wide or specifically focused and should identify any operational and system bottlenecks. Volume testing should be performed after audit tuning recommendations have already been implemented. Manhattan can assist the clients in the VPT planning, execution and post execution recommendations.

FEATURES + FUNCTIONS COMMON TO MA-EXECUTED VOLUME PERFORMANCE TESTING (VPT):

- Built using industry standard tools for load testing and analysis
- Supports testing of Manhattan Associates applications including interface throughput and request response cycles
- Support for mobile application testing
- Provides a reusable volume testing framework for periodic client-led test cycles
- Performs a variety of test types: Load (peak user and data, limited duration), Stress (test until breakpoint) and Soak (long running, endurance)
- Precise data design, analysis and optimization by Manhattan Associates' product experts

Volume tests are typically major projects and should be planned and executed with the assistance of your Manhattan representative.

The execution and analysis phase of a VPT typically include:

- Determining which RF, UI and MHE transactions make the most sense and are most beneficial for VPT and for future regression testing
- Iterative execution of the scripts with a predetermined number of users per transaction at 50%, 100% and 125% of peak volume of period
- Monitoring and tuning of the database (parameters and indexes) and application server-unix system behavior during and after the execution of the tests (includes utilization, memory utilization, disk I/O rate, etc.)
- Re-executing tests until performance objectives in performance agreement are met

3.2 COMPRESSION PERFORMANCE TEST PLANNING

Compression Performance test gives an opportunity for both operations and systems to be validated for peak readiness in a short period of time. A phased compression test is recommended by a controlled hold and release of orders into the system.

The compression test checklist includes:

- Review of expected volume spike on the peak day/week.
- Plan for an iterative phased approach of compression testing with 15%, 50% and 125% of the expected volume ramp up.
- Determine a plan of execution with orders held up in the upstream applications and released in a controlled manner.
- Review operational preparedness and labor plans to handle the surge in volume.
- Identify the infrastructure bottlenecks example - application servers, application host interfaces, print queues and shipping interfaces.
- Evaluate performance and readiness of the parcel interfaces like Agile, Metapack, or ScanData to keep up with the peak volumes

A volume test is recommended when volume is expected to surpass the original design assumptions.

3.3 MANHATTAN SURECHECK™

PROACTIVE AUDITS FOR OPTIMAL SYSTEM AND PROCESS HEALTH

To get the most out of your supply chain and store inventory systems, it is highly important to run your software applications efficiently and smoothly. The demands of your business and software systems are ever changing. With the constant hardening of IT security and changing demands of third party software support your systems and infrastructure need constant patching or upgrades. These changes require periodic and comprehensive reviews to identify and eliminate critical system level bottlenecks that could impact you during periods of high volume.

INFRASTRUCTURE AUDIT

An Infrastructure Audit can be particularly helpful before a go-live or major functionality change, before peak seasons when key parameters have changed (e.g., order volume, processes, personnel), or in response to system problems that may indicate infrastructure instability. Infrastructure audit includes checks of Pre-go-live audit.

For example, our team will:

– Perform a holistic review of infrastructure health
– Check system resource usage logs and identify bottlenecks
– Perform resource usage analysis of the application, Java Containers and databases
– Check to ensure purges are running properly
– Check database maintenance routines, inefficient query plans and database bottlenecks

PERFORMANCE OPTIMIZATION AUDIT

Whether your application infrastructure is on cloud or on-premise, the Performance Optimization Audit is a service recommended to ensure your system is performing optimally for peak volume. Application Performance Monitoring (APM) tool-Dynatrace is used to profile the base and custom source code with live production volume and identify the performance bottle-necks. Performance Optimization audit includes checks of Infrastructure audit.

These audits help ensure your applications are properly installed, that your infrastructure is optimally configured, and your long-term administration processes are in place. As part of preparing for a successful peak season, Manhattan SureCheck can work with you proactively to pinpoint opportunity and ensure you're running healthy supply chain / store inventory environments.

To learn more about Manhattan SureCheck or for a project quote, please contact your project or support team.

3.4 PLAN FOR ADDITIONAL LABOR

It is very common to hire temporary workers during peak times to augment the labor force. Preparations for handling these inexperienced workers include:

– Developing a process for administering their user profiles
– Reviewing security and SOX compliance
– Ensuring adequate equipment is available and all users are able to connect to the application/system (RF guns, voice units, iPod/iPad or other iOS devices used at stores, printers that print shipping labels/packing slips, etc.)
– Confirming that Manhattan license key restrictions will accommodate the anticipated increase in users

3.5 TRAINING AND DOCUMENTATION

It is important that standard operating procedures and training materials be in place before peak season begins. Manhattan clients may consider using our Manhattan Training and Change Management Services.

This is a flexible, holistic, hands-on education program designed for rapid results. It includes software—FastTrack™—that allows you to quickly develop manuals, reference guides and reusable training material. See **manh.com/services/customer-training/overview** for details.

Manhattan SureCheck is recommended every year well before peak, to ensure the software systems are configured right to achieve optimal performance and stability.

READINESS

4.1 CODE AND CONFIGURATION FREEZE

Changes to the system should be avoided during peak season to minimize disruptions. Therefore, a code and configuration deadline should be agreed upon and implemented. However, a process for approving and installing "hot fixes" should also be documented to accommodate situations in which system changes are necessary. Additionally, a pre-code freeze deployment plan of all "must needed for peak" changes should be planned with targeted deadlines. Changes to the system should be avoided during peak season in an effort to minimize disruptions.

4.2 MAINTENANCE WINDOWS

If peak season involves additional or extended shifts, the following items should be reviewed to ensure they are not negatively affected:

- Scheduled waves, allocation/ reallocation, supply balance and inventory sync from fulfillment center to Order Management jobs
- Automatic operating system jobs such as start/ stops, system bounce
- Database scripts (i.e., index browning)
- Item/Facility import
- Purge schedules (purge start time and duration should be reviewed)
- Host system jobs
- SCI reports, Order Management Ad hoc queries and such reports

4.3 DATABASE ADMINISTRATION AND TUNING

It is imperative that Manhattan clients have their DBA review these elements extremely carefully since proper database auditing, administration and tuning can make the difference between a successful peak season and one plagued with technical challenges. Additionally, they must be completed in advance since several of the following tasks cannot be implemented on-demand in urgent situations.

HARDWARE AND INFRASTRUCTURE

- Analyze database (DB) and operating system (OS) reports to ensure the capacity to meet expected demand
- Verify the health of the database server infrastructure (IO/Network)

DATABASE ADMINISTRATION

- Audit the database server to ensure OS and DB parameters are optimized for peak performance
- Implement alerts and monitors to track database issues
- Audit and adjust disk layouts
- Track SQLs that will degrade due to high volume and tune them to avoid performance degradation –Analyze database connections for potential leaks

DATABASE MAINTENANCE

- Verify that all DB maintenance practices (e.g., index browning, etc.) are in place (see System Administration guide)
- Ensure a process for collecting database statistics is in place
- Review AWR reports and ensure there are no un-optimized SQLs

4.4 QA AND PRODUCTION SYNCHRONIZATION

Synchronization of test and production runs will confirm that the latest code updates have been installed and will minimize issue research delays caused by inconsistencies.

- SDNs/executables
- Configuration data (a database dump from production to test is ideal)
- Database stored procedures
- Database indexes
- Providing a current purged database dump to the Manhattan team to assist with synchronization of testing

4.5 ADVANCED PEAK SPECIFIC ADMINISTRATOR SETTINGS

The following recommendations involve advanced settings, so assistance from your Manhattan representative is highly recommended if adjustments are necessary. If changes are made, they should not be implemented before comprehensive testing is completed.

Administrator settings that can be reviewed include:

COMMIT FREQUENCIES FOR PROCESS INTENSIVE AREAS

MULTI-THREADING SETTINGS

WMSERVERS.DAT FOR NUMBER OF SERVERS

START/STOP SCRIPTS

ENVIRONMENTAL/CONFIGURATION AUDITS OF:

- Queue depth
- Server time out changes
- Adjustment of LockWaitTimeOut for all the servers
- Adjustment of number of instances of the servers
- JIT versus Onstart mode

TEMPORARY SYSTEM CHANGES*:

- Purge retention (consider adjusting tables with high transaction loads during peak season if performance or disk space is a concern)
- Multi-threading of certain wave components
- Number of MIS Queues
- Installation of temporary physical servers for load balancing or an additional SAN to accommodate disk space needs

*It is highly recommended that a schedule be developed both for implementing these changes and for reversing them after peak season.

MONITORING, DIAGNOSTICS AND SUPPORT

5.1 TROUBLESHOOTING TOOLS

In the event that issues arise during peak season, the following tools should be installed (and staff training completed) well in advance to mitigate impact to production. Manhattan offers a Level 3: System Administration & Troubleshooting class that covers most of these tools and techniques.

EXAMPLE DATABASE TOOLS:

– Database contention monitoring scripts (along with required permissions)
– AWR and ASH reports for Oracle databases or Snapshots for DB2
– Database alerts for various errors on the database server

EXAMPLE UNIX AND LINUX TOOLS

– NMON reporting to analyze AIX and Linux performance
– Process monitoring scripts to collect memory and CPU statistics

EXAMPLE NETWORK TOOLS

– Install Wireshark (or other network monitoring tool) on all servers

EXAMPLE APPLICATION TOOLS

– Example Application Tools

APPLICATION (OLM & MIF) MONITORING ALERTS

– CPU, Heap and Memory utilization
– Failed message count for various message types (Item, Facility, Inventory Updates, Customer
– Order/Sales Order, Invoices/ Shipments, etc.)
– Monitor inflow of orders and shipments from Stores/Warehouse Management and alert if the volume drops much below the estimated volumes
– Alerts on orders stuck in unexpected status, over shipments, inventory sync failure, Order Management Warehouse Management balancing, etc.

5.2 PEAK SEASON SUPPORT

To ensure effective and rapid response to any incidents that occur during peak season, it is imperative that you have the right support structure in place at all levels. It is common for our customers to leverage Manhattan support services to help cover extended hours of operations and provide the higher levels of service the business demands during peak.

5.3 CUSTOMER TRIAGE AND ESCALATION

An issue triage and escalation plan should be developed to expedite issue research and resolution. This plan typically starts at the user level and ends with executive escalation. Contact information (home and mobile numbers) for all key personnel must be provided, including rarely contacted resources such as DBAs, network administrators and operating system administrators. Plans can be in the form of flow-charts or spreadsheets, and should specify escalation timeframes and guidelines for determining various levels of severity.

MANHATTAN CAN HELP:

– Provide Turnkey Level-2 Support Services to Augment Your Support Team
– Provide Dedicated 24x7 On Call Support
– Support Onsite during Critical Days

SUPPORT LEVELS

LEVEL 1 (Your Helpdesk)	
– LOG INCIDENTS WITH RELEVANT DETAILS	– ADDRESS LOW-COMPLEXITY ISSUES
– ENGAGE APPROPRIATE L2/L3 SUPPORT	– UPDATE INCIDENT TRACKING SYSTEM

LEVEL 2 (Your Subject Matter Experts)	
– INCIDENT TRIAGE / REMEDIATION	– KNOWLEDGEBASE ARTICLE CREATION
– PROBLEM MANAGEMENT	– QA TESTING SUPPORT
– RELEASE & CHANGE COORDINATION	– BUSINESS OPERATIONS GUIDANCE
– CONFIGURATION TUNING & REPORT MAINTENANCE	– PROACTIVE FUNCTIONAL MONITORING

LEVEL 3 (IT or Managed Services)	LEVEL 3 (Product Support – CSSE*)
– APPLICATION ADMIN & HEALTH MONITORING	– BUILD & RESPOND TO APP & SYSTEM ALERTS
– DATABASE ADMIN & HEALTH MONITORING	– RECOMMEND TEMP WORKAROUNDS TO APP ISSUES
– PRODUCT CODE DEPLOYMENTS	– RESOLVE WARRANTED APPLICATION DEFECTS
– BUILD & RESPOND TO APP & SYSTEM ALERTS	– DELIVER UPDATES & PATCHES
	– PROVIDE ONSITE & DEDICATED REMOTE SUPPORT SERVICES

POST PEAK FOLLOW UP

After peak season, it is important to follow up on open action items as well as how critical scenarios were resolved. It is recommended that a post-peak overview meeting (that includes all stakeholders and your Manhattan representative) be held to review:

– Lessons learned
– Action plans (including target dates) for any follow-up items
– Restoring temporary changes to pre-peak settings
– Code/configuration unfreeze date
– Determining the timeframe for planning for the next peak season

Please let your Manhattan support team know if you would like to review this document in detail, require any special support, or have any questions about peak season preparation. Our team of experts is ready and available to assist you to ensure your success!

PEAK READINESS CHECKLIST

- ✓ Determine and communicate the peak season data and timeframes
- ✓ Review this Peak Success Guide and set up a meeting with Manhattan to learn more
- ✓ Develop a project plan with clear action items and target dates
- ✓ Set up Operations Review with your designated Operations Advisor
- ✓ Communicate and review the action plans with key stakeholders including Manhattan
- ✓ Execute the plan

Email: **inquiries@manh.com**

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