

# Guide to Automated IBM i Message Monitoring

Why manual message monitoring isn't sufficient and how to implement an automated solution.



# Why automated monitoring matters

With today's complex IBM i environments, automated monitoring is becoming increasingly necessary...

Message and resource monitoring software automatically alerts staff to critical issues, system failures, order delays, and other environmental errors before they impede progress. Monitoring software allows your staff to spend more time solving the problems that arise instead of waiting for them to happen.

As IBM i environments grow ever more complex, automated message and resource monitoring is a necessity. However, due to this complexity it can take several months to properly configure the software to monitor and react to all potential issues that can occur across systems. It's important to filter out unnecessary alerts. This will allow staff to bypass common informational messages and prioritize critical notifications.

To help you focus your monitoring efforts, here are seven of the most valuable areas on the IBM i that should be thoroughly set up and configured for monitoring. It is important to note that when configuring monitoring for IBM i systems, we recommend setting up system monitors in the following order to assure the most critical issues are given top priority.

## Hardware Issues

Hardware issues affect both system performance and user productivity, giving this top priority. Issues such as the failure of a controller card or a system backplane require downtime to repair, halting production. Disk drive crashes or tape drive failures put your business at risk of losing its most critical asset—its data. Well-defined monitors can help ensure that your system is always available, and your data is protected.

## Inactive Services or Subsystems

Inactive services or subsystems can hold up orders, delay shipping, and inevitably sour relations with customers. Ensuring that critical subsystems are not idling in a message wait (MSGW) or held (HLD) status is a manual task often left to System Administrators. Whether it's a primary or a critical service, configuring automated monitors to watch for any delays or errors will keep your system up to speed and save precious administrator time.

## Program Behavior Problems

Program behavior problems can surface in a myriad of ways. Jobs that are executing beyond their scheduled run times or long running jobs indicate an issue that requires user intervention. Jobs utilizing too much CPU can have a negative impact on the system's overall performance. Scheduled batch jobs must be run and completed at specified times of day, and failure to do so can cause a domino effect on subsequent jobs. Automated monitors which can alert users of job run time irregularities can present more serious issues later.

## Program Error Messages

Program error messages, although often helpful, can place jobs into an inquiry status that requires a response before continuing. Other times, crucial jobs can be canceled due to an error. Without consistent monitoring, these errors can go unnoticed for an extended period, delaying critical processing and impacting end users.

## System Performance

System Performance can be maintained at a healthy status by implementing monitors in key areas. If the IBM i is not operating at peak performance, critical processing will be delayed and impede production elsewhere in the company. Prevent this by implementing monitors for CPU and DASD usage. Both high CPU and system ASP usage affect everything running on the IBM i, stagnating production and putting your data at risk. Alerting IT to performance issues can resolve processing bottlenecks and assist companies in gaining a better understanding on when to consider a hardware upgrade.

## User Profiles

User profiles can be monitored to ensure employee productivity and account for employee movements in the system, for security or company auditing. Many companies are required to produce reports for auditors that show when user profiles were enabled or disabled, or when the security officer (QSECOFR) password is changed. Setting up an alert for the occurrence of these actions will help you remain compliant with auditing requirements.

Notification of a user profile being enabled or disabled with proper approval also reduces the risk of having an unauthorized user access your system. In the event of an erroneous user profile deletion, tracking the status of these profiles can also assist IT in restoring them.

## Device Issues

Device issues can also cause major impediments for business production. Tape drives going offline or controllers failing to start are only two examples of critical device errors that can be monitored and thus quickly remedied. Being notified in real time of such key device issues can help ensure your business will continue to run as expected.

To help you stay organized while you implement your message monitoring solution, we've put together a checklist of message queues and resources that can be monitored on the IBM i. Each of these message and resource categories has a quick description so that you can decide the level of monitoring it needs, as well as a notes section for any business specific protocols that you might like to keep track of.

# IBM i Monitoring Checklist

This checklist is designed to inform you about the different types of message queues and system resources that you can monitor on the IBM i. In each section, we've included what we've found to be the most useful queues, messages ID's and resources for businesses. However, we've also included space for you to add additional queues and messages ID's that are specific to your company's monitoring needs.

Under each message are a short description, and the following options:

**Importance:** Prioritize each message type with either "Critical" "Warning" or "Alert".

**Setup Email Alerting:** Email alerts bring messages to the attention of the staff who need to see and/or respond to it. Check this box if you've set up email alerts for this message type.

**Create Automated Reaction:** If the reaction to a certain message is the same every time it occurs, consider setting up automatic reaction to save time in the remediation process. Check this box if you have set up an automated reaction for this message type.

**Operator Instructions/Manual Reaction:** If this message type requires a manual reaction, or if there are other notes associated with it, add them in this section. Some examples notes that might be included in this section is "Acknowledge receipt" or "call IBM at 1-800-IBM-SERV "

# Messages

## System Messages (QSYSOPR) \*

### Hardware Errors

The OS will automatically generate messages when critical physical hardware failures occur such as internal & external disk failures, UPS, installed cards etc...

MESSAGE ID:	DESCRIPTION	PRIORITY	EMAIL ALERTING?	AUTOMATED REACTION?	OPERATOR INSTRUCTIONS/REACTION NOTES
CPI0946	Mirrored protection is suspended on disk unit				
CPI8890	Failure during an operation with I/O processor				
CPPA837	Battery Power Unit fault.				
CPP29B8	RAID protection suspended on controller				
CPP9101	IOP failed.				

# Messages

## System Messages (QSYSOPR) \*

### Damaged Objects

Typically objects can be damaged due to system outages such as a crash, power failure etc...  
Messages can be automatically generated by the operating system (OS) as a result.

MESSAGE ID:	DESCRIPTION	PRIORITY	EMAIL ALERTING?	AUTOMATED REACTION?	OPERATOR INSTRUCTIONS/REACTION NOTES
CPF8109	&8 damage on physical database file &4.				
CPF8173	Work control block table damaged.				
CPF814A	License management object damaged.				
CPF8105	Device description &4 damaged.				
CPF8134	User profile &4 damaged.				



# Messages

## System Messages (QSYSOPR) \*

### Tape Errors

These errors generally can occur during save and restore operations

MESSAGE ID:	DESCRIPTION	PRIORITY	EMAIL ALERTING?	AUTOMATED REACTION?	OPERATOR INSTRUCTIONS/REACTION NOTES
CPA3706	Load next tape volume on device. (C G)				
CPA4058	Wrong tape type. Not initialized.				
CPA4059	Unexpected Weekly Tape Mount Found				
CPA4317	Device cannot write to loaded volume. (C R)				
CPI2404	Volume *N on device TAP01 wrong type (C INZ R)..				

# Messages

## System Messages (QSYSOPR) \*

### Communication failures

As communication between the IBM i is disrupted, messages will be generated by the OS to help you troubleshoot communication problems.

MESSAGE ID:	DESCRIPTION	PRIORITY	EMAIL ALERTING?	AUTOMATED REACTION?	OPERATOR INSTRUCTIONS/REACTION NOTES
CPA5817	Line &23 failed. Probable local hardware problem.				
CPA5823	No activity on line &23. Line disconnected.				
CPA5835	Controller &24 failed. Link problem. (C G R)				
CPA589F	Not enough resources for controller &24. (CR)				
CPA59FA	Internal system failure on line &23. (C G R)				

# Messages

## System Messages (QSYSOPR) \*

### Database record locks

When a record is already being updated by one process, a lock is placed on it which prevents any other processes from updating until the first update is completed.

MESSAGE ID:	DESCRIPTION	PRIORITY	EMAIL ALERTING?	AUTOMATED REACTION?	OPERATOR INSTRUCTIONS/REACTION NOTES
RNQ1218	Unable to allocate a record				
CPF3130	Member &2 already in use.				
CPF9803	Cannot allocate object &2 in library &3.				
CPF9847	Error occurred while closing file &1 in library &2.				
CPF5027	Record &6 in use by job or transaction &9.				

# Messages

## Printer messages

Messages which are typically generated by printers attached to the IBM i or virtually created on the operating system.

MESSAGE ID:	DESCRIPTION	PRIORITY	EMAIL ALERTING?	AUTOMATED REACTION?	OPERATOR INSTRUCTIONS/REACTION NOTES
CPA3450	Load form type XX device XX writer.				
CPA4009	End of forms on printer.				
CPA4044	Verify alignment on printer.				
CPA5243	Press Ready, Start, or Start/Stop on printer.				
CPA3314	Writer ready to continue after failure.				

# Messages

## Application Messages \*

Application messages will expose which applications need addressing, e.g. active statuses, license code status, attention messages etc...

MESSAGE ID:	DESCRIPTION	PRIORITY	EMAIL ALERTING?	AUTOMATED REACTION?	OPERATOR INSTRUCTIONS/REACTION NOTES
BRM1524	System start up program executed.				
CPA7025	Receiver &1 in &2 never fully saved. (I C)				
CPF9E71	Grace period expired. Requesting user not added.				
CPF0995	Subsystem &1 ending in progress.				
RNQ0202	The call to &6 ended in error (C G D F).				



# Messages

## System History Log Messages (QHST) \*

The history log contains a high-level trace of system activities such as system, subsystem, and job information, device status, and system operator messages.

MESSAGE ID:	DESCRIPTION	PRIORITY	EMAIL ALERTING?	AUTOMATED REACTION?	OPERATOR INSTRUCTIONS/REACTION NOTES
CPF1124	Job &3/&2/&1 started on &18 at &19 in subsystem &8 in &9. Job entered system on &20 at &21.&17				
CPF1164	Job &3/&2/&1 ended on &14 at &15; &10 seconds used; end code &8 &13.				
CPC2606	Vary off completed for device QPADEV0003.				
CPF2234	Password from device &1 not correct for user & 2.				
CPF1393	User profile &2 has been disabled.				

# System Resources

**Hardware** - There are many resources that a particular IBM i environment depends on. Critical resources include CPU utilization, storage, disk space, and communication lines. Other resources, such as the availability of a particular application or service, are of concern only to specific sites.

MESSAGE ID:	DESCRIPTION	PRIORITY	EMAIL ALERTING?	AUTOMATED REACTION?	OPERATOR INSTRUCTIONS/REACTION NOTES
	Disk Space (DASD)				
	Processor Utilization (CPU)				
	Communication				



# System Resources

**Queues** - are mechanisms used for communications between users, jobs, or programs

MESSAGE ID:	DESCRIPTION	PRIORITY	EMAIL ALERTING?	AUTOMATED REACTION?	OPERATOR INSTRUCTIONS/REACTION NOTES
	Job Queues				
	Output Queues				
	Distribution Queues				
	Message Queues				

# System Resources

**System Jobs** - System jobs are created and used by the operating system to control system resources and process other system-wide requests

MESSAGE ID:	DESCRIPTION	PRIORITY	EMAIL ALERTING?	AUTOMATED REACTION?	OPERATOR INSTRUCTIONS/REACTION NOTES
	Subsystems				
	Spool Writers				
	Web Servers				

# System Resources

**User Jobs (Business Applications)** - interactive jobs, submitted batch jobs, communications-evoked batch jobs, MRT batch jobs, and autostart jobs. User jobs do not include system jobs, subsystem monitor jobs, spooling readers, or spooling writers.

MESSAGE ID:	DESCRIPTION	PRIORITY	EMAIL ALERTING?	AUTOMATED REACTION?	OPERATOR INSTRUCTIONS/REACTION NOTES
Status					

# System Resources

**Replication (such as MIMIX, ITERA, etc...)** - Automated solutions that can copy data changes continuously between systems in real-time and keep records of all changes which can be reverted at anytime

MESSAGE ID:	DESCRIPTION	PRIORITY	EMAIL ALERTING?	AUTOMATED REACTION?	OPERATOR INSTRUCTIONS/REACTION NOTES
	Subsystem status				
	Data group state				
	Distribution Queues				
	User status				

# System Resources

**Backup & Recovery** - Keeping up with your backup and recovery strategy to ensure critical information is not lost and can be recovered in the event of a disaster recovery situation

MESSAGE ID:	DESCRIPTION	PRIORITY	EMAIL ALERTING?	AUTOMATED REACTION?	OPERATOR INSTRUCTIONS/REACTION NOTES
	End of day jobs				
	Month end jobs				
	Month start jobs				
	Biweekly jobs				



# absMessage

## Critical Application, Message, & Resource Monitoring on the IBM i

absMessage is a message and resource monitoring solution for the IBM i, allowing companies to centralize and streamline the monitoring of critical system activity. absMessage is available through 5250 display, Desktop GUI, and Web UI interfaces. Each interface includes built in alerting as well as network views, with all interfaces available in one comprehensive solution.

### Customizable Sorting Options

Color code, hide and organize messages so that critical information is never overlooked.

### Instant Notifications

absMessage can notify specified users via email, text messaging, or pager, once a message is generated on the system.

### Remote Browser Access

The flexible Web UI console gives users the ability to view messages on multiple systems from any Internet Web browser.

### Multiple Interfaces

The various interfaces—Web UI, 5250 display, and Desktop GUI—enable your staff to respond to or correct errors, 24x7x365. absMessage can be configured to manage messages in a way that meets the unique needs of your business.

### Service Points

The service points interface with absMessage offers companies an easy and intuitive way to group and organize systems for monitoring of all system messages. This allows users to quickly drill down or respond based on system location when necessary.

Service Points uses the latest web technology to organize, filter, and manage multiple systems' activities across the entire IBM i environment. With Service Points, companies can customize and categorize systems into groups based on business needs, such as filtering by department, line of business, application, or location.

When using the Web UI, easy to use Dashboard gauges can quickly show you system resources such as CPU and DASD utilization performance metrics and trends.

[More About absMessage](#)

# About SEA

Established in 1982 Software Engineering of America has built a worldwide reputation as a leading provider of data center software solutions. With products licensed at over 10,000 data centers worldwide, SEA's customers include 9 of the fortune 10 and over 90% of the Fortune 500.

SEA's formula of superior product development, continual enhancement, and responsive service give our customers benefits and competitive advantages unmatched in the marketplace. We provide a portfolio of highly intelligent and functionally rich tools that enable customers to optimize, automate, tune, manage and monitor all critical operations of their IBM Z and IBM i installations.

Our tools allow our customers to operate more effectively, improve security, identify and improve underperforming processes, streamline operations, optimize batch operations, eliminate waste, and significantly lower costs. We continually improve our products to give customers a consistently better experience with their software tools in each functional area, while our dedicated service and support ensure that our customers succeed in achieving the full spectrum of benefits our solutions can provide.