



Managed Services

- IT as a Service
- Security as a Service
- Cloud Service

IT as a Service

CrystalAlert Server and Application Monitoring

Fault Monitoring - Servers

The service will provide 24x7x365 remote fault monitoring of the contracted servers using standard WMI or SNMP management tools from Crystal's Network Operations Centers. Crystal will respond to any alarms received from the servers and will begin work on identification and notification of the issue immediately upon recognition of the alarm. Crystal will notify End User according to a mutually agreed escalation process which will be customized for End User as outlined in the Customer Service Manual.

In the event that an outage or problem occurs which is determined to be a site related issue, Crystal will document the issue within its ticketing system. Crystal will close the ticket once the site related issue clears up. Once the ticket is closed, the End User will receive an email indicating that the site issue is resolved. Examples of site related issues are: Loss of power to site, damage to premise cabling, accidental disconnection of site cabling or equipment.

In the event that an outage or problem occurs which is determined to be an operating system or hardware failure, Crystal will identify the issue and notify the End User according to mutually agreed escalation process. CRYSTAL will complete the ticket after receiving outage information and resolution from the end user once the issue has been corrected by the end user.



A fault is defined as a failed device poll indicating the target device is not visible to Crystal's network management systems or a trap which indicates a failure condition. Crystal's Fault Monitoring services consist of the following:

- 24x7 device monitoring to include real-time WMI and SNMP polling of devices to confirm their visibility to Crystal's server management systems; including up/down status of interface, and expected response from mutually agreed TCP/UDP ports and archiving the events in the current and historical event log
- SNMP trap monitoring for critical events on the customer's server resources
- Monitor OS availability utilizing SNMP and/or WMI polling to verify the proper processes and services are running on the Server.
- Detection, notification, and documenting each fault within Crystal's trouble ticket system
- Safeguard Customer's proprietary information and take all necessary precautions to ensure secure management connection from Crystal's remote management center into the Customer's network
- Supply secure Customer web access to view the fault monitoring alarms and event logs

Server Hardware Monitoring

Crystal will place contracted servers (Customer Premise Equipment) under our Hardware Monitoring service. This service will provide 24x7x365 remote monitoring of the server hardware using supported vendor element manager and SNMP management tools from Crystal's Network Operations Centers. Crystal will respond to any alarms received from the servers and will begin work on identification and notification of the issue immediately upon recognition of the alarm. Crystal will notify Customer according to a mutually agreed escalation



process which will be customized for Customer as outlined in the Customer Service Manual.

When the NOC receives a hardware alarm, Crystal will begin problem triage and notify the customer according to mutually agreed escalation process.

A hardware failure is defined as an alert from the server hardware monitoring element received to Crystal's network management systems. Crystal's Fault Monitoring services consist of the following:

- 24x7 device monitoring and receipt of hardware related alerts
- Notify the Customer of all hardware faults per Customer provided contact process
- Safeguard Customer's proprietary information and take all necessary precautions to ensure secure management connection from Crystal's remote management center into the Customer's network
- Supply secure Customer web access to view the fault monitoring alarms and event logs

Performance Monitoring Services – Server and Applications

Crystal's Performance Monitoring service consists of the following:

- Gathering performance statistics including, but not limited to, device availability, CPU utilization, network interface status, network traffic, physical memory, and disk space utilization, for the contracted servers
- Monitor the data gathered from the network elements related to the Devices against the established performance thresholds



- Measure operating system availability and performance using process monitoring
- Measure application process performance using process monitoring
- Measure application response times via synthetic transactions and WMI/SNMP statistics
- Notify Customer when server level performance thresholds (CPU, Memory, Disk, and NIC) have been exceeded as per the Customer Services Manual
- Supply secure Customer Web access to view the performance data and create pre-configured reports
- Provide monthly performance reports summarizing server performance data over the previous calendar month