

precisely

Ironstream for ServiceNow® Event Management for IBM Z®

Concepts Guide

Version 7.3.0



Ironstream for ServiceNow Event Management for IBM Z Concepts Guide

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Contents

| | |
|--|----|
| Preface | 1 |
| Ironstream for ServiceNow Event Management for IBM Z | 3 |
| Ironstream Overview | 3 |
| Benefits | 3 |
| Architecture and Data Flow..... | 4 |
| Increasing Productivity | 5 |
| Ironstream Mainframe Agent..... | 6 |
| Forwarding z/OS Messages..... | 6 |
| Forwarding VTAM Messages..... | 6 |
| Forwarding Db2 Management Data..... | 6 |
| Forwarding WebSphere Management Data..... | 6 |
| Components of the Agent..... | 6 |
| Agent Main Task..... | 7 |
| Agent Subtasks | 7 |
| Ironstream Proxy Server | 10 |
| Proxy Server Components..... | 10 |
| Managing Ironstream Server Processes..... | 10 |
| ServiceNow Event Interface Integration | 11 |
| ServiceNow Event Creation..... | 11 |
| Processing Events..... | 11 |
| Processing Alerts through Orchestration..... | 11 |

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Preface

This section provides Precisely Support contact information, a list of related resources, and the revision history for this document.

Audience

This document is intended for licensed Ironstream for ServiceNow Event Management for IBM Z administrators and users.

Please note: *Ironstream for ServiceNow Event Management for IBM Z* was formerly *EView/390z Mainframe Event Management for ServiceNow*. Precisely is in the process of re-branding all EView products to Ironstream.

Precisely Support

To contact Precisely Support, please visit <https://support.precisely.com/>.

Related Resources

Ironstream for ServiceNow Event Management for IBM Z provides manuals to help you use the product and understand the underlying concepts. All product documentation is available at <https://support.precisely.com/>.

- *Installation Guide*

Explains how to upload Ironstream installation files from the Ironstream proxy server, update z/OS, NetView/390, and SOLVE:NETMASTER software, start and stop Ironstream and also describes all relevant console commands.

- *Administration Guide*

Explains how to configure and use Ironstream. Also includes detailed troubleshooting procedures and explanations of Ironstream system messages.

In addition to Ironstream documentation, related ServiceNow products provide a comprehensive set of manuals that help you use the products and improve your understanding of the underlying concepts.

Revision History

This manual's title page contains the following identifying information:

- Version number, which indicates the software version.
- Print date, which changes each time the document is updated.

This table indicates changes made to this document since the last released edition.

| Date | Description |
|-------------|----------------------------------|
| Feb-2021 | Document re-branded to Precisely |

Ironstream for ServiceNow Event Management for IBM Z

This chapter describes Ironstream for ServiceNow Event Management for IBM Z. It also provides a brief overview of its benefits, architecture, and data flow.

Ironstream Overview

Ironstream for ServiceNow Event Management for IBM Z integrates the z/OS mainframe platform into ServiceNow Event Management. With the addition of Ironstream, ServiceNow Event Management provides you with true end-to-end management of your information technology (IT) environment, from PCs to mainframe computers.

Ironstream Event Management is closely integrated with the ServiceNow Event Management plugin. An Ironstream agent monitors the z/OS mainframe environment for important events and critical situations. These event and situation messages are communicated via TCP/IP to a ServiceNow MID server, where the event is forwarded to the ServiceNow instance. Event management rules are applied to the events and alerts can be raised based on the defined rules. As with any alerts actions can be taken on mainframe events such creating incidents, launching tasks or performing a remediation task.

Ironstream Event Management also includes monitoring functions to check critical system metrics and send those metric values to the ServiceNow instance to be evaluated by event rules.

Benefits

Ironstream Event Management provides you with the following benefits:

- **Compatibility with z/OS**

Ability to co-exist with currently installed z/OS management solutions.

- **Health Monitoring for z/OS Systems**

Health monitors for z/OS systems and their standard business applications.

- **Consolidated Management View**

Consolidated end-to-end management view, which gives you a business-centric perspective.

- **Automatic Problem Resolution**

Two-way communication with z/OS systems to resolve problems quickly and automatically.

Architecture and Data Flow

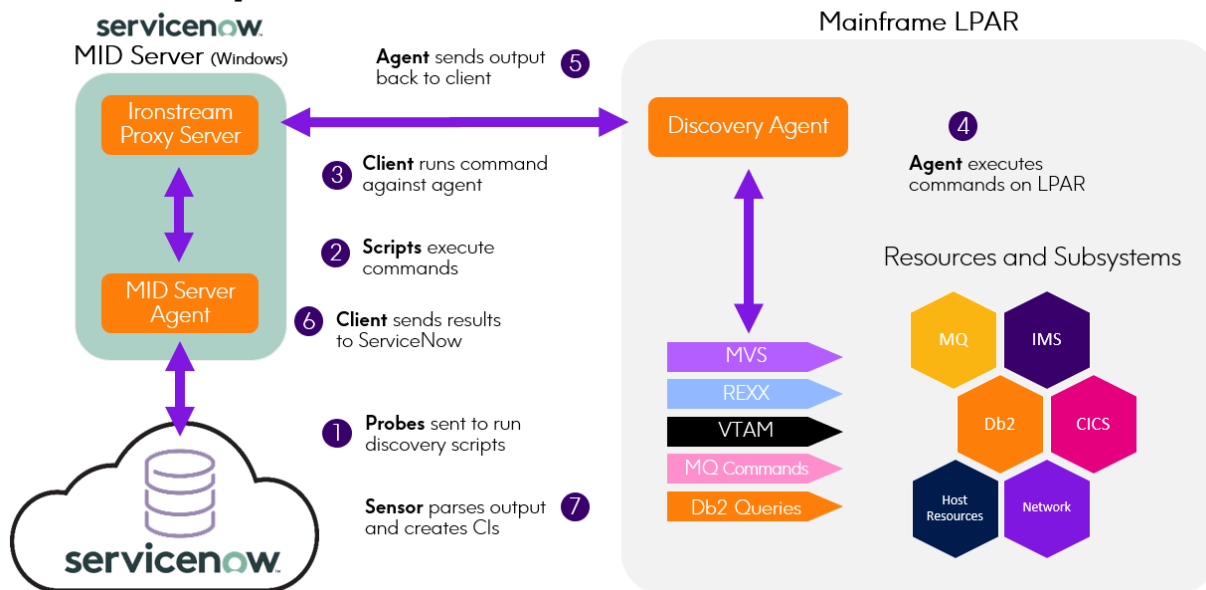
Ironstream Event Management consists of two main components:

- The Ironstream Agent component that runs on the z/OS mainframe
- Ironstream Proxy Server component that runs on a ServiceNow MID server.

Events are forwarded from the agent to the ServiceNow MID server which forwards those events to the ServiceNow instance. ServiceNow event rules are used to evaluate the mainframe events and create alerts based on event rule definitions. This pulls most of the message processing work off of the mainframe, where CPU time is a more valued resource.

The diagram below shows the data flow between the z/OS mainframe, the Ironstream proxy server and the ServiceNow MID Server.

Discovery Workflow



Ironstream enables you to respond to critical z/OS events and messages through pre-defined automatic actions and resolution instructions, creating alerts to notify your operations staff. Messages coming from the z/OS system are routed to the After a critical situation is resolved, the automation can be set up to close the alert in ServiceNow.

Increasing Productivity

Consolidating the management of mainframes and other systems with ServiceNow enables you to act proactively on critical events and messages. Using this intuitive and cost-effective solution as the central end-user interface provides the basis for service level management.

Ironstream Mainframe Agent

This chapter describes the agent provided with Ironstream Event Management. .

The Ironstream agent operates as a z/OS started task. Mainframe messages are collected by the agent from several sources, outlined below. Predefined messages filters identify important messages that are then packaged into a common data structure and forwarded via TCP/IP to the MID Server for processing.

Forwarding z/OS Messages

The z/OS messages can include information from the following:

- Operating System
- Db2 (Data Base 2)
- JES2 (Job Entry Subsystem 2)
- MQSeries (Message Queuing Series)
- CICS (Customer Information Central System) utilizing an Ironstream exit program in the CICS address space
- WebSphere

Forwarding VTAM Messages

The z/OS network task, VTAM, issues messages regarding the mainframe SNA network. The Ironstream agent collects these VTAM messages through the VTAM PPO interface (see the section “PPO Subtask”).

Forwarding Db2 Management Data

Ironstream provides the ability to monitor DB2 messages that are sent to the z/OS system console, including additions to the default templates for monitoring critical Db2 messages and processes.

Forwarding WebSphere Management Data

Ironstream provides the ability to monitor WebSphere messages that are sent to the z/OS system console. Included are additions to the default templates for monitoring critical WebSphere messages and processes.

Components of the Agent

In the Ironstream agent, the main task activates several subtasks that interact with the various mainframe message sources. Collected messages are transferred to the TCP subtask, which is responsible for forwarding the information to the Ironstream proxy server.

Agent Main Task

The Ironstream mainframe agent executes as a started task or batch job on the mainframe system. The Job Control Language (JCL) starts the main task program. The main task program opens and reads initialization cards from System Input (SYSIN), which specifies the subtasks to be started.

As the cards are processed, a set of interprocess communication queues is set up in storage to be shared by the main task and all subtasks. All communication between tasks within the Ironstream agent is accomplished by these queues. After SYSIN card processing is complete, the Ironstream agent main task routes messages between the subtask queues and processes maintenance (Modify) commands from the z/OS console operator.

Agent Subtasks

The Ironstream agent subtasks collectively provide all the necessary communications and system interfaces. Each of the subtasks are dedicated to a particular interface function and communicates with other subtasks using the Ironstream agent interprocess communications queues.

Types of Subtask Queues

Each subtask uses the following two queues:

- **Subtask Input Queue**

Queue used for messages destined for processing in the subtask interface. These messages can be commands for execution or messages to be transmitted to the MID server component.

- **Subtask Output Queue**

Queue used for messages that are the result of subtask processing. Messages from this queue are routed by the main task to other subtasks for processing.

TCP Subtask

The TCP/IP (TCP) subtask is an executable that requests the opening of two TCP/IP ports from the TCP/IP address space on the mainframe, then waits for the Ironstream proxy server component to start communication with the Ironstream mainframe agent through these ports. The TCP subtask accepts commands from the Ironstream proxy server component, routes them to the appropriate subtask for execution, and sends the replies back to the Ironstream proxy server component over a TCP/IP port.

As a rule, you must have one TCP subtask defined for each Ironstream proxy server component that will be connecting to the mainframe through TCP/IP.

Optionally, the TCP subtask will write messages to buffering datasets if the connection to the Ironstream server is lost. When communication is re-established, the stored messages will be forwarded to the server.

CMD Subtask

The Command (CMD) subtask is an executable that does the following:

1. Establishes an extended Multiple Console Support (MCS) console for Ironstream.

2. Receives z/OS commands (for example, Modify) from the Ironstream proxy server components.
3. Sends the commands to the defined console.
4. Receives the response messages from z/OS.
5. Sends the responses back to the Ironstream proxy server component that initiated the command.

MVS Subtask

The MVS Messages (MVS) subtask is an executable that does the following:

1. Establishes an extended MCS console for Ironstream.
2. Receives z/OS messages and applies a filter to keep only desired messages.
3. Forwards messages to all active Ironstream server components.

SPO Subtask

The Secondary Program Operator (SPO) subtask is an executable that does the following:

1. Initializes a SPO Active Control Block (ACB) to VTAM.
2. Receives VTAM commands (for example, Vary or Display) from Ironstream proxy server component subtasks.
3. Sends the commands to VTAM over the SPO.
4. Receives the response messages from VTAM.
5. Sends response messages back to the Ironstream proxy server component subtask that initiated the command.

If several commands arrive at nearly the same time from different OMi operators, the Ironstream agent allows for multiple SPO subtasks to distribute the work.

PPO Subtask

The Primary Program Operator (PPO) subtask is an executable that initializes a PPO ACB to VTAM. This initialization enables the ACB to receive unsolicited messages from VTAM, most importantly messages about status changes of VTAM resources. The PPO subtask forwards these messages to all active Ironstream server subtasks.

Because VTAM allows only one application on the system to act as the PPO receiver, you should define the PPO subtask only if the system does not have another active PPO receiver, such as NetView/390 or SOLVE:NETMASTER. If NetView/390 or SOLVE:NETMASTER is present, use the PPI subtask instead.

PPI Subtask

The Program-to-Program Interface (PPI) subtask is an executable that communicates with a user exit in the NetView/390 address space. Because the NetView/390 application controls the PPO connection to VTAM, the Ironstream agent requires that the exit be installed to pass on incoming VTAM information to the Ironstream agent. The PPI subtask then passes the VTAM message and alert data to the active Ironstream server component subtasks.

Use the PPI subtask only if a NetView/390 is present on the system. Otherwise, use the PPO subtask.

OSINFO Subtask

The Operating System Information subtask (OSINFO) collects on-demand information about the mainframe system its active address spaces, DASD statistics, memory usage, and submitted jobs. These data can be requested at any time using a command script on the OVO management server to allow users to develop customized queries about the status of the mainframe.

Subtask Restart Function

The Ironstream agent has a subtask restart function that automatically restarts the mainframe subtasks when communication is lost from the host. This restart function eliminates the need to restart the entire Ironstream agent address space.

Ironstream Proxy Server

This chapter describes the components and process management provided by Ironstream proxy server.

The Ironstream proxy server components use the ServiceNow REST API to send mainframe messages as events to the ServiceNow instance. Event rules process the messages to create alerts which can trigger actions based on rules in the policies. These actions can be commands to be sent back to the agent to be executed on the mainframe z/OS system.

Proxy Server Components

For each mainframe LPAR monitored and controlled by Ironstream, a Message and Command Server (MCS) service is started. All incoming mainframe data comes through the MCS and is then forwarded to the MID Server service using the REST API.

- The `ev390hostcmd` utility is a program that is called on the server to send commands to the agent to be executed on the mainframe. Responses from the mainframe are delivered to the standard output of the `ev390hostcmd`.
- The `ev390snmetric` utility is a program that forwards the values of monitored metrics to ServiceNow. For example, a CPU usage monitor would collect the CPU percentage used on the mainframe and then use the `ev390snmetric` program to send that value on to ServiceNow for processing and a possible alert creation.

Managing Ironstream Server Processes

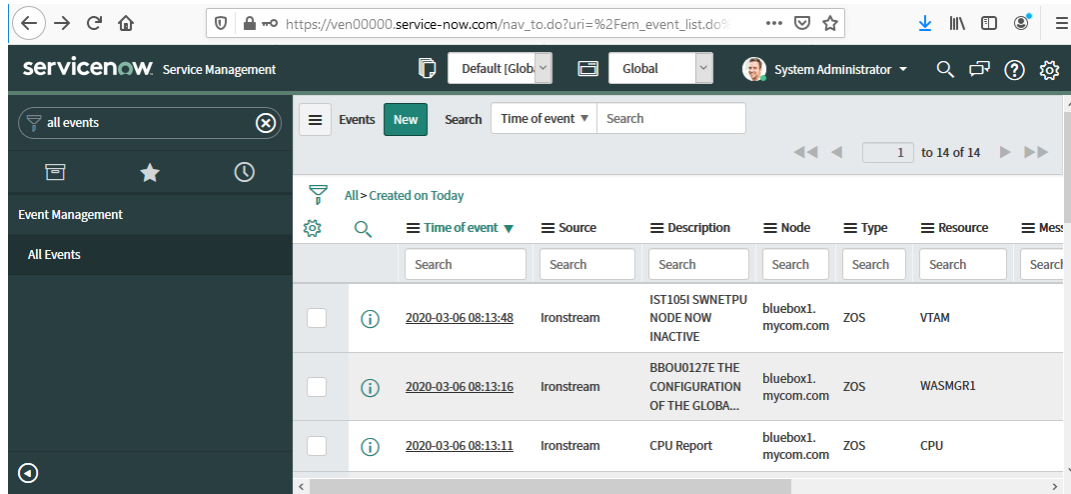
The Ironstream Configuration Tool is a web browser interface is provided with Ironstream to define the LPARs that are to be monitored, and to start and stop the MCS process for each LPAR.

ServiceNow Event Interface Integration

This chapter illustrates how IBM mainframe events are seamlessly integrated into existing ServiceNow displays.

ServiceNow Event Creation

Ironstream uses the REST API on the MID server to forward mainframe information to the ServiceNow instance. Each submission is received as an Event in ServiceNow.



Processing Events

The Ironstream app which is available in the ServiceNow store provides a starter set of actions that can be taken on the incoming events, including:

- Alert creation from unsolicited mainframe messages
- Alert creation from resource monitors/threshold limits

Processing Alerts through Orchestration

The Ironstream app also provides a starter set of alert remediation workflow to use with ServiceNow Orchestration to develop logic to issue automatic actions back to the mainframe, either to gather additional information or issue a command to correct the outstanding problem.

