

BMC AMI Ops Monitor for Java Environments 3.3

Technical documentation

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The BMC AMI Ops Monitor for Java Environments (BMC AMI OpsMJE) product formerly known as the MainView for Java Environments product) helps you monitor and analyze the Oracle Java virtual machines (JVMs) that are running in your IBM z/OS environment.

Getting started

- How BMC AMI OpsMJE works
- Product architecture

Planning

Deployment planning and system requirements

Installing

Installation, configuration, and maintenance

Customizing after installation

Post-installation product customization

Using

Working with the product

Working with infrastructure

Management of shared components

Messages

BMC messages from the following product lines:

- BMC AMI Cost products
- BMC AMI Data for Db2 products
- BMC AMI Data for IMS products
- BMC AMI Ops products
- BMC AMI Security products

Notices

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This section provides information about what is new or changed in this space, including documentation updates.

- Recent notices



Tips

In notices tables, you can change the sort order by clicking the column headings. You can also filter by the type of notice (flash, technical bulletin, or release notes) or by date.

To access notices for earlier versions of the product, [click here](#).

Recent notices

Notices	Date
(ID 255687) Technical bulletin: SPE2204 enhancement to version 10.4.00 of NGL	04 Apr 2022
Release notes: Version 2.0 of BMC AMI Ops User Interface	04 Apr 2022
(ID 255965) Technical bulletin: An SPE2204 enhancement to version 3.3 of BMC AMI Ops Monitor for Java Environments is available	04 Apr 2022
(ID 253278) Technical bulletin: RSL2204 is available	01 Apr 2022
UPDATED (ID1518) Flash: Log4Shell security vulnerability affects a subset of BMC AMI Ops products and components	13 Feb 2022
UPDATED (ID 1548) Flash: The BMC AMI Ops Infrastructure Host Server component might malfunction and cause failures when logging in to the CRA or the BMC AMI Ops UI	07 Feb 2022
(ID 1511) Technical bulletin: SPE2201 enhancements to version 7.0.00 of BMC AMI Ops Infrastructure are available	06 Jan 2022
(ID 1466) Technical bulletin: RSL2201 and RSL2201C are now available	04 Jan 2022

Notices	Date
(ID 1502) Flash: DBC Extended MCS consoles might cause a large number of messages to queue in the CONSOLE address space, causing high CPU usage	10 Dec 2021
UPDATED (ID 1451) Flash: Communication errors between the z/O... Connect EE API Requester interceptor and the OpsMJE PAS might cause a private storage area leak	29 Nov 2021
UPDATED (ID 1476) Flash: A storage overlay occurs when using TCPIP.PROFILE definitions with more than 682 specific ports defined	19 Nov 2021
UPDATED (ID 1421) Technical bulletin: SPE2110 enhancements to version 7.0.00 of BMC AMI Ops Infrastructure are available	20 Oct 2021
(ID 1446) Technical bulletin: Reminder of upcoming changes to th... maintenance delivery services for BMC AMI products	13 Oct 2021
UPDATED (ID 1342) Flash: An unusual error causes the BsamFile t... enter a retry loop that might cause messages to flood the SYSLOG and exhaust the address space storage	08 Oct 2021
(ID 1405) Technical bulletin: SPE2110 enhancements to version 3.3.00 of BMC AMI Ops Monitor for Java Environments are available	01 Oct 2021
(ID 1420) Technical bulletin: SPE2110 enhancements to version 2.... of the BMC Common REST API are available	01 Oct 2021
(ID 1358) Technical bulletin: RSL2110 is available	01 Oct 2021
UPDATED (ID 1344) Technical bulletin: Applying PTF BQY2869 results in a storage leak that might cause an S878 abend	01 Oct 2021
(ID 1441) Flash: Applying PTF BQY2869 might cause a storage leak and failure of every PAS containing history dataset	01 Oct 2021
(ID 1401) Technical bulletin: Day-one support is now available for IBM z/OS V2.5	30 Sep 2021
UPDATED (ID 1255) Technical bulletin: July 2021 enhancements to version 3.3 of BMC AMI Ops Monitor for Java Environments are available	29 Aug 2021
(ID 1355) Technical bulletin: Product Alert emails will soon link to the notice webpage instead of to a PDF	09 Aug 2021
(ID 1341) Technical bulletin: We are discontinuing the production ... cumulative RSL maintenance by December 31, 2021	30 Jul 2021

Notices	Date
(ID 1247) Technical bulletin: RSL2107 and RSL2107C are now available	01 Jul 2021
(ID 1264) Technical bulletin: SPE2107 enhancements to version 2.... of BMC Common REST API are available	01 Jul 2021
(ID 1305) Technical bulletin: July 2021 enhancements for version 7.0.00 of BMC AMI Ops Infrastructure are available	01 Jul 2021
(ID 1305) Technical bulletin: July 2021 enhancements for version 7.0.00 of BMC AMI Ops Infrastructure are available	01 Jul 2021
(ID 1322) Flash: The MVE Host Server might exceed its connection limits and require a restart	29 Jun 2021
(ID 1278) Technical bulletin: New password for the ESD FTP sites takes effect at 00:00 UTC on July 1, 2021	07 Jun 2021
(ID 1256) Technical bulletin: We are announcing the end of support for eFix PTF Distribution Services	04 Jun 2021
(ID 1240) Technical bulletin: New EV SSL certificate for filedownload.bmc.com FTPS services takes effect at 00:00 Coordinated Universal Time (UTC) on May 22, 2021	29 Apr 2021
UPDATED (ID 1202) Flash: Unpredictable results might occur in th... Next Generation Logger component	15 Apr 2021
Release notes: Version 3.16.00 of Installation System	01 Apr 2021
(ID 1145) Technical bulletin: RSL2104 is available	01 Apr 2021
(ID 1191) Technical bulletin: April 2021 enhancements to version 3.3.00 of BMC AMI Ops Monitor for Java Environments are available	01 Apr 2021
(ID 1136) Technical bulletin: SPE2104 enhancements to version 2.0 of BMC Common REST API are available	01 Apr 2021
(ID 1134) Technical bulletin: SPE2104 enhancements to version 7.0.00 of BMC AMI Ops Infrastructure are available	01 Apr 2021
(ID 1172) Technical bulletin: New SHA-2 Global Root Certificate to access mft.bmc.com	04 Mar 2021
(ID 1149) Technical bulletin: Summary history data for JMX garbage collection might not be displayed correctly when you migrate from version 3.1 to a later version	15 Feb 2021

Notices	Date
(ID 1023) Technical bulletin: BMC is announcing the transformation of the BMC Mainframe product lines to BMC AMI	25 Jan 2021
Release notes: Version 3.3.00 of BMC AMI Ops Monitor for Java Environments	21 Jan 2021
Release notes: Version 3.15.00 of Installation System	21 Jan 2021
(ID 1087) Technical bulletin: RSL2101 and RSL2101C are available	21 Jan 2021
Release notes: Version 7.0.00 of BMC AMI Ops Infrastructure	21 Jan 2021
(ID 1091) Technical bulletin: We are withdrawing BMC Internet Service Retrieval on December 31, 2020	18 Nov 2020
(ID 1083) Technical bulletin: An outage is scheduled for filedownload.bmc.com services, BMC ISR, SMP/E RECEIVE ORDER, and web-based RECEIVE ORDER	04 Nov 2020
Release notes: Version 3.14.00 of Installation System	15 Oct 2020
(ID 1002) Technical Bulletin: RSL2010 is available	15 Oct 2020
(ID 1061) Technical Bulletin: Announcing a web-based maintenance request service for RECEIVE ORDER	15 Oct 2020
(ID 741) Technical bulletin: BMC is announcing an enhancement to how we notify you about notice updates	15 Sep 2020
(ID 1011) Technical bulletin: Submit ideas for enhancements via BMC Communities	31 Aug 2020
(ID 1005) Technical bulletin: An outage is scheduled for RECEIVE ORDER and BMC ISR	31 Jul 2020
(ID 953) Technical bulletin: New passwords for the ESD FTP and BMC ISR FTP sites take effect at 00:00 Coordinated Universal Time (UTC) on July 16, 2020	11 Jun 2020
(ID 952) Technical bulletin: New EV SSL certificate for filedownload.bmc.com FTPS services takes effect at 00:00 Coordinated Universal Time (UTC) on June 20, 2020	28 May 2020

Notices	Date
(ID 922) Technical bulletin: Change in the PTF publication process	22 May 2020
Release notes: Version 3.12.00 of the Installation System	30 Apr 2020
(ID 930) Technical bulletin: Change in GA dates for quarterly RSLs	16 Apr 2020
(ID 879) Technical bulletin: RSL2004 is available	02 Apr 2020
(ID 834) Technical bulletin: RSL2001 and RSL2001C are available	03 Jan 2020
(ID 856) Technical bulletin: Failure to apply the November update for the Installation System results in incorrect installation jobs	18 Dec 2019
(ID 786) Technical bulletin: BMC now supports IBM SMP/E RECEIVING ORDER for BMC mainframe products	17 Dec 2019
(ID 801) Technical bulletin: An outage is scheduled for filedownload.bmc.com services, BMC ISR, and EPD	06 Nov 2019
(ID 772) Technical bulletin—RSL1910 is available	03 Oct 2019
(ID 736) Technical bulletin: Scheduled outage for filedownload.bmc.com services and BMC ISR, server changes, and new EV SSL certificate	04 Sep 2019
(ID 735) Technical bulletin: You can now use your favorite search engine to find information in BMC product documentation	07 Aug 2019
(ID 710) Technical bulletin—RSL1907 and RSL1907C are available	03 Jul 2019
(ID 642) Technical bulletin – RSL1904 is available	04 Apr 2019
Technical bulletin – RSL1901 and RSL1901C are available	03 Jan 2019
Technical bulletin – BMC ISR extract job \$E05XTRT and retrieve job \$J05RETV are missing the COPYSTEP and SFTP steps	24 Dec 2018
Release notes – version 3.9.00 of the Installation System	13 Dec 2018

Notices	Date
Technical bulletin – RSL1810 is available	 04 Oct 2018
Technical bulletin – RSL1807 and RSL1807C are available	 03 Jul 2018
Release notes – version 3.7.00 of Installation System	 21 Jun 2018
Technical bulletin – New passwords for the ESD FTP and BMC ISR FTP sites take effect at 00:00 Coordinated Universal Time (UTC) on July 3, 2018	 14 Jun 2018
Release notes – version 3.6.00 of Installation System	 03 May 2018
Release notes – version 3.5.00 of Installation System	 14 Dec 2017
Release notes – version 3.3.00 of Installation System	 22 Jun 2017

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Getting started

The BMC AMI Ops Monitor *for Java Environments* (BMC AMI OpsMJE) product helps you monitor and analyze the Java virtual machines (JVMs) that are running in your IBM z/OS environment.

With BMC AMI OpsMJE, you can:

- Discover all JVMs that are running on your z/OS system
- View the internal performance of the Java Runtime Environment (JRE), and how it affects the overall capacity of the IBM zEnterprise environment
- Identify JVM components with high CPU usage, and break down costs by component
- Display data from the IBM Health Center diagnostic tool

This section contains the following topics:

- [How BMC AMI OpsMJE works](#)
- [Product architecture](#)

How BMC AMI OpsMJE works

BMC AMI Ops Monitor *for Java Environments* discovers JVMs that are running in your z/OS environment. The product then collects CPU and SMF data from the discovered JVMs, and displays the data in views.

BMC AMI Ops Monitor *for Java Environments* can also collect Java Management Extensions (JMX) data and IBM Health Center data for a JVM. To collect this data, you must set up *target profiles* and configure JMX and Health Center for each JVM that you want to monitor.

This section contains the following topics:

- [JVM discovery](#)
- [Data collection](#)
- [How BMC AMI OpsMJE uses Next Generation Logger \(NGL\)](#)

Related topics

[Getting started](#)

[Configuring JMX and IBM Health Center](#)

JVM discovery

When you start the BMC AMI Ops Monitor for Java Environments product, it discovers all of the JVMs that are running on your system. To discover new JVMs (those added after startup), the product uses either *auto discovery* or *timed discovery*:

- Auto discovery (*available for z/OS 2.2 and later*)

If you accept the default parameter AUTODISC=YES during setup (in [Product initialization parameters](#)), the product automatically discovers new JVMs and JVM threads when they are added.

- Timed discovery

If you set AUTODISC=NO, the product discovers new JVMs and JVM threads at timed intervals (by default, every 10 seconds). If needed, you can change the interval as explained in [Changing the interval for timed discovery](#).

When using timed discovery, you also have the option of discovering JVMs on demand (in between the timed intervals), as explained in [Discovering new JVMs on demand \(timed discovery only\)](#).

 **Note**

Timed discovery is less efficient than auto discovery.

Related topic

[How BMC AMI OpsMJE works](#)

Data collection

BMC AMI Ops Monitor for Java Environments uses JMX and the IBM Health Center to gather internal performance data for the JVMs running on your system.

You can specify JMX ports for any JVM for which you want to collect JMX data. BMC AMI OpsMJE collects the following JMX data:

- Garbage collection
- Heap and nonheap memory usage
- CPU usage by system and application categories in the JVM
- Thread stack trace, locking, contention, and deadlock
- Class loading
- Logging configuration
- MBeans that are currently deployed in the JVM
- Memory usage by memory pool and memory manager
- JVM runtime configuration
- z/OS operating-system information

In addition, if the IBM Health Center is active on a JVM, BMC AMI OpsMJE collects the following data:

- JVM properties information for Health Center ports
- System properties information
- Environmental properties information
- Class loading information for the Health Center ports defined to a target
- Garbage collection
- Class histograms
- Object allocation

Related topic

[How BMC AMI OpsMJE works](#)

How BMC AMI OpsMJE uses Next Generation Logger (NGL)

The BMC Next Generation Logger (NGL) technology allocates, initializes, and manages log files. NGL minimizes the cost of logging and the potential for resource contention.

BMC AMI Ops Monitor *for Java Environments* uses NGL to log the following data types:

- Java virtual machine (JVM) CPU history
- Garbage collection and memory usage data from JZOS SMF 121-1 and IMS SMF 29-2 records

NGL structures are automatically defined when the BMC AMI OpsMJE PAS starts.

Related topic

[How BMC AMI OpsMJE works](#)

Product architecture

BMC AMI Ops Monitor *for Java Environments* is based on the BMC AMI Ops Infrastructure (BMC AMI OpsI) architecture.

BMC AMI OpsMJE uses BMC AMI OpsI to handle these tasks:

- Manage the overall address space
- Provide the user interface
- Maintain history data
- Define alarms

 **Note**

Alarms are available for all products that use BMC AMI OpsI. You can create alarms to trigger an automatic alert or action, and to provide IBM MVS console messages. For more information, see [Using Alarm Management](#).

This section contains the following topics:

- [BMC AMI Ops interface architecture](#)
- [BMC AMI OpsMJE architecture](#)
- [Overview of BMC AMI OpsMJE navigation in MainView Explorer](#)

Related topic

[Getting started](#)

BMC AMI Ops interface architecture

You can run BMC AMI Ops Monitor for Java Environments on either of the following BMC AMI Ops interfaces:

- Windows-mode ISPF interface

In windows mode, the product runs in the following address spaces:

- Coordinating address space (CAS)
- Product address space (PAS)
- User address space (UAS)

The Runtime Component System (RTCS) runs alongside these address spaces. It provides programming services to all CASs, PASs, and UAs.

- MainView Explorer GUI

MainView Explorer is a desktop graphical user interface (GUI) that lets you access BMC AMI Ops products through your web browser, or by installing the interface as an application in a local directory. MainView Explorer consists of the following components:

- Client
The client runs as a signed Java applet under a web browser.
- Host server
The host server runs as an address space on an IBM z/OS system.

Related topic

[Product architecture](#)

BMC AMI OpsMJE architecture

Two key components of the product's architecture are the product address space (PAS) and the product's JVM (MJEJVM):

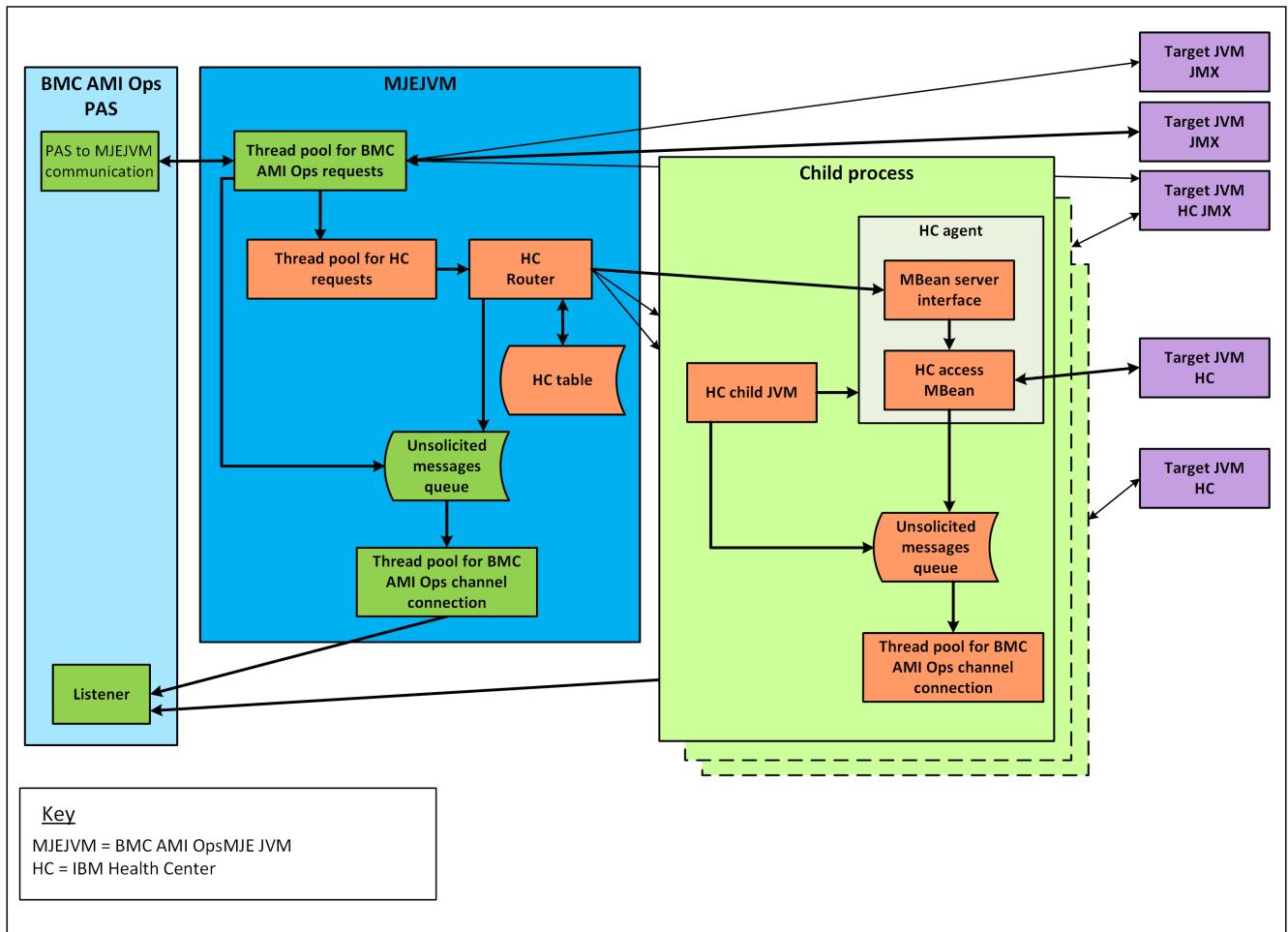
- The BMC AMI Ops Monitor *for Java Environments* PAS displays the data collected from your JVMs in views.
- The BMC AMI OpsMJE JVM (MJEJVM) collects and processes data from your JVMs (including JMX and Health Center data), and passes that data back to the PAS.

When the PAS initializes, it starts the MJEJVM, which collects data from the target JVMs.

Note

To log CPU and SMF data, the architecture also includes the BMC Next Generation Logger (NGL) component. NGL runs on a BMC Execution Component *for z/OS* (DBC) subsystem. The BMC Execution Component *for z/OS* was previously named Db2 Component Services.

The following figure shows the process for Health Center requests. The figure does not include the process for JMX.

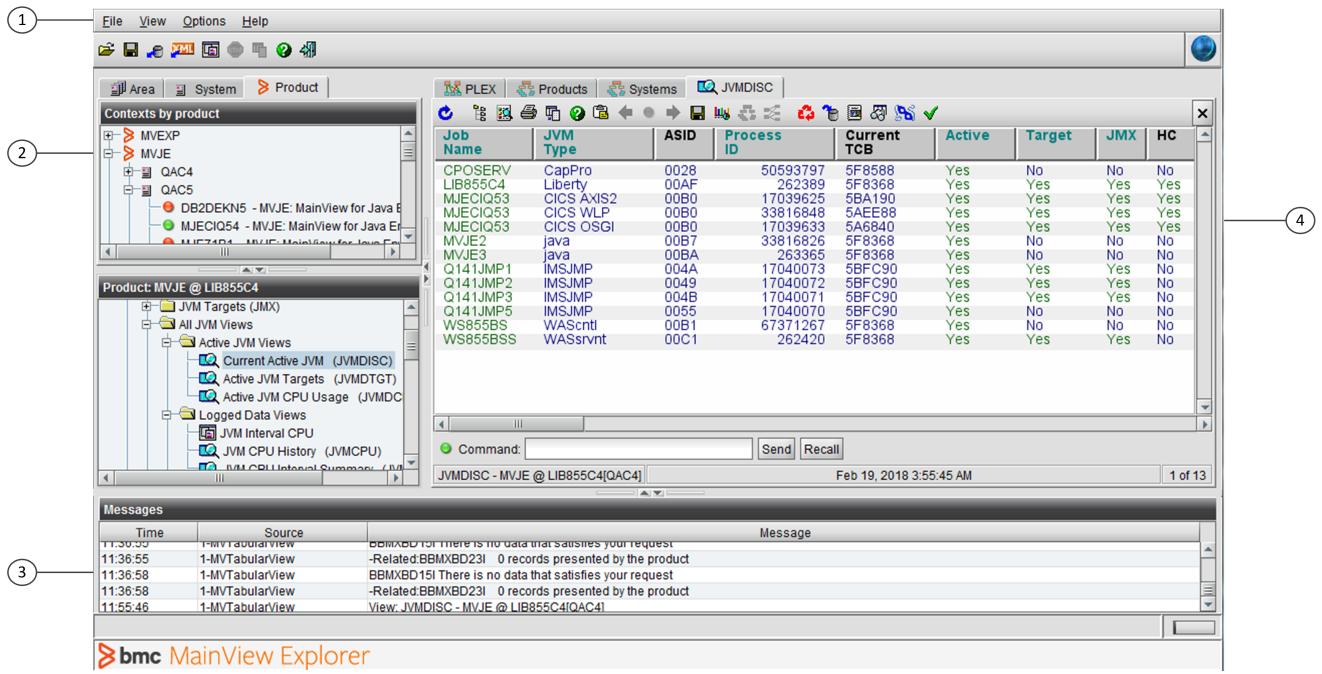


Related topic

[Product architecture](#)

Overview of BMC AMI OpsMJE navigation in MainView Explorer

In addition to a menu bar, the MainView Explorer console consists of navigation, messages, and view frames:



Legend	
1	Menu bar
2	Navigation frame
3	Messages frame
4	View frame

The frames provide specific functions related to viewing or locating data:

- Navigation**
This frame consists of the Context tree and the Product tree. Icons or nodes on the tree represent subsystems, system images, BMC AMI Ops products, and views.
- Messages**
This frame displays a log of product messages, including requests to the host server.
- View**
This frame displays open views as tabbed pages. Each tab contains the name of the view and an icon that indicates the type of view.

You can select the BMC AMI Ops Monitor *for Java Environments* master PAS from a product tab on the Context tree in the Navigation frame. Then, you can access the EZJE view by expanding the **ALLJVM** folder in the Product tab, and selecting **EZJE - EASY MENU**. You can also access view containers showing graphs for interval views. For more information, see [View containers](#).

Related topic

[Product architecture](#)

Planning

This section contains topics that explain system and security requirements, and procedures that you need to complete before installing the product.

- System requirements
- Security requirements
- Setting up RACF for z/OS Connect EE and Liberty JVMs
- Adding BMC AMI OpsMJE program properties

System requirements

BMC AMI Ops Monitor for Java Environments requires the following system resources:

- IBM z/OS Version 2.3 or later (for the PAS)
- IBM z/OS Connect EE Version 3.0.39.0 or later (for z/OS Connect EE servers)
- A 64-bit version of Java version 8.0 or later (for the MJEJVM, the Java address space for the product)
- Two local, unsecured, TCP/IP ports for the communication between the PAS and the MJEJVM:
 - A listener port to receive unsolicited information from the MJEJVM. For more information, see the description for the EVENTPORT parameter in [Product initialization parameters](#).
 - A port for synchronous communication with the MJEJVM. For more information, see the description for the TCPCMJEPORT parameter in [Environmental parameters](#).

⚠ Important

BMC AMI OpsMJE uses the localhost for TCP/IP connections to other address spaces on the LPAR. Make sure that the localhost is defined as 127.0.0.1 (ipv4) or ::1 (ipv6).

- In the TCP PROFILE, if the TCPIP backlog value specified as SOMAXCONN is less than the default (1024), we recommend that you set the value to the default.
- BMC AMI Ops Infrastructure (BMC AMI OpsI) version 7.0
- BMC AMI OpsMJE PTF BPF0383
- The following IBM PTFs:

IBM release level	IBM PTF number
IMS Version 14	UI52317
	UI51035
IMS Version 15	UI53004
IMS with IBM Health Center (Java 8 SR5 FP10 or FP11)	APAR IJ02018

Related topics

[Planning](#)

Security requirements

This topic lists IBM RACF security requirements for BMC AMI Ops Monitor *for Java Environments*. If you are running a security product other than IBM RACF, see your security product documentation for more information.

BMC AMI OpsMJE requires the following security resources:

- OMVS segment for the user ID that runs the BMC AMI OpsMJE PAS
- Superuser authority for the OMVS segment
- Read access to the BPX.JOBNAME Facility
- Read access to IBM z/OS Connect Enterprise Edition (z/OS Connect EE)
- Read access to the IBM WebSphere Liberty server

Use the following procedures to meet these requirements.

To grant superuser authority for the OMVS segment

Use one of the following methods:

- For the user ID, grant authorized read access to BPX.SUPERUSER (the Facility class resource).

Example

```
.....  
..... permit BPX.SUPERUSER CLASS(FACILITY) ACCESS(READ) ID(<userID>)  
.....
```

- For the user ID, grant authorized read access to SUPERUSER.PROCESS.GETPSENT (the UNIXPRIV class resource).

Example

```
.....  
..... permit SUPERUSER.PROCESS.GETPSENT CLASS(UNIXPRIV) ACCESS(READ) ID(<userID>)  
.....
```

Note

The following conditions apply to assigning UID:

- To activate the new definitions, you might need to refresh the updated class.
- The segment requires a nonzero user ID and a home path.

For more information, see [OMVS segment requirements and ESM definitions](#)

To grant read access to BPX.JOBNAME

For the user ID, grant authorized read access to BPX.JOBNAME (the Facility class resource).

Example

```
..... permit BPX.JOBNAME CLASS(FACILITY) ACCESS(READ) ID(<userID>)
```

Note

To activate the new definitions, you might need to refresh the updated class.

For more information, see [Managing security for BMC AMI Ops products](#).

To grant read access to z/OS Connect EE

1. For the z/OS Connect EE user ID, grant authorized read access to BPX.SMF (the Facility class resource).

```
..... PERMIT BPX.SMF CLASS(FACILITY) ACCESS(READ) ID(<userID>)
```

Note

For *userID*, specify the z/OS Connect EE user ID.

2. For the BMC AMI Ops Monitor for Java Environments user ID, grant authorized read access to BBGZDFLT.ZOS (the APPL class resource).

```
..... PE <BBGZDFLT> ID(<userID>) CLASS(APPL) ACCESS(READ)
```

Notes

For *userID*, specify the PAS user ID. The PAS must have the appropriate security certificates associated with its user ID.

For *BBGZDFLT*, specify the APPL class security prefix for the server.

To grant read access to the Liberty server

For the BMC AMI Ops Monitor for Java Environments user ID, grant authorized read access to the Liberty server (the EJBROLE class resource).

```
..... PERMIT <serverProfilePrefix>.com.ibm.ws.management.security.resource.Administrator ID(<userID>) ACCESS(READ)
..... CLASS(EJBROLE)
```

```
PERMIT <serverProfilePrefix>.com.ibm.ws.management.security.resource.Reader ID(<userID>) ACCESS(READ)
CLASS(EJBROLE)
```

Notes

For *userID*, specify the PAS user ID. The PAS must have the appropriate security certificates associated with its user ID.

For *serverProfilePrefix*, specify profile prefix for the Liberty server.



For more information, view the Quick Course
Set MVJE and Liberty servers to gather JMX data using the REST interface [7](#).

To grant RACF read access to MVS.MCSOPER.** CL(OPERCMDs)

For the user ID, grant authorized read access to MVS.MCSOPER.** CL(OPERCMDs):

```
PERMIT MVS.MCSOPER.** CL(OPERCMDs) ID(<userID>) ACCESS(READ)
```

Specifying ** grants general access to MVS.MCSOPER.

Alternatively, you can grant specific access to the BMC AMI OpsMJE console. The default console name is OPSMJExx where:

- The default console name prefix is OPSMJE. The console name prefix is specified in the EMCSPREF keyword in MJEINIxx.
- The console name suffix given by a PAS (xx) is a value from 01 through 99.

Related topics

[Product initialization parameters](#)

[Planning](#)

Setting up RACF for z/OS Connect EE and Liberty JVMs

If you want to monitor IBM z/OS Connect EE and IBM WebSphere Liberty JVMs, use the following procedures to set up RACF for every JVM:

- Define RACF EJBROLE objects
- Create a certificate for the MVJE PAS
- Grant access to a PE CLASS facility

The examples in the procedures use the following values:

- z/OS Connect EE user ID: ***zosConnectUserId***
 - BMC AMI Ops Monitor for Java Environments PAS user ID: ***mvjePasUserId***
mvjePasUserId must be connected to RACF group MVJE.
 - SAF credentials profile prefix as displayed in the server.xml: ***safProfilePrefix***

i Example

```
<safCredentials profilePrefix="BBGZDFLT" />
```

Define RACF EJBROLE objects

To define RACF EJBROLE objects, specify the following definitions in the RACF interface:

Note

If RACF EJBROLE objects are not defined on your system, check for generic resources that might already be controlling your RACF access.

```
PE CLASS(APPL) <safProfilePrefix> +
    ID(<mvjePasUserId>) ACCESS(READ)

PE <safProfilePrefix>.zos.connect.access.roles.zosConnectAccess +
    CLASS(EJBROLE) ID(<mvjePasUserId>) ACCESS(READ)

PE <safProfilePrefix>.zos.connect.access.roles.zosConnectAdmin +
    CLASS(EJBROLE) ID(<mvjePasUserId>) ACCESS(READ)

PERMIT <safProfilePrefix>.com.ibm.ws.management.security.resource.Reader +
    CLASS(EJBROLE) ID(<mvjePasUserId>) ACCESS(READ)

PERMIT +
    <safProfilePrefix>.com.ibm.ws.management.security.resource.Administrator +
    CLASS(EJBROLE) ID(<mvjePasUserId>) ACCESS(READ)

PERMIT +
    <safProfilePrefix>.com.ibm.ws.management.security.resource.allAuthenticatedUsers+
    CLASS(EJBROLE) ID(<mvjePasUserId>) ACCESS(READ)
```

Create a certificate for the MVJE PAS

Choose one of the following methods:

! Notes

- The certificate should not restrict Key usage (EKU).

- Update the keystore tags in the server.xml file with the zosconnect keyring.
- Update the **Keystore** and **Truststore** parameters in the MJESSLxx member with the the PAS keyring.

If you sign all of the Liberty JVMs into the system with the **same** CERTAUTH (CA), take the following steps:

1. Find the CA for your Liberty JVM:
 - a. In the server.xml, find the KeyRing name referenced in the ssl keyStoreRef.
 - b. Specify **RACDCERT listring(keyRing) id(liberty_userid)**
 - c. Ensure that the Truststore KeyRing contains the CA (and any additional certificates in the certificate chain back to the root CA).
2. Use the CA to generate a default personal certificate for the MVJE PAS.
3. (For z/OS Connect EE JVMs) Use the RADCERT MAP command to create a mapping of the PAS distinguished name back to the user ID.
4. In the RACF profile, create a KeyRing for the MVJE PAS:
 - a. Add the certificate for the MVJE PAS.
 - b. Add the CA chain to the KeyRing.
5. Type **ADDSEC** on the command line and create a MJESSLxx member with the following values:
 - Member Suffix: xx (we recommend MV)
 - Description: JVM Security Definition
 - SSL=YES
 - KEYSTORE=*mvjePasKeyRing*
 - KEYPASS=password
 - KEYTYPE=JCERACFKS
 - TRUSTSTORE=*mvjePasKeyRing*
 - TRUSTPASS=password
 - TRUSTTYPE=JCERACFKS
 - USERID=*PasUserId*

If you sign the Liberty JVMs into the system with different CAs, take the following steps:

1. Generate a CA for the MVJE PAS.
2. Add the CA to the Truststore for all JVMs.
3. Use the CA to generate a default personal certificate for the MVJE PAS.
4. (For z/OS Connect EE JVMs) Use the RADCERT MAP command to create a mapping of the PAS distinguished name back to the user ID.
5. In the RACF profile, create a KeyRing for the MVJE PAS:
 - a. Add certificate for the MVJE PAS.
 - b. Add the CA for the MVJE PAS to the KeyRing.
 - c. Add the CA chains for the Liberty JVMs to the Keyring.
6. Type **ADDSEC** on the command line and create a MJESSLxx member with the following values:
 - Member Suffix: xx (we recommend MV)
 - Description: JVM Security Definition

- SSL=YES
- KEYSTORE=*mvjePasKeyRing*
- KEYPASS=password
- KEYTYPE=JCERACFKS
- TRUSTSTORE=*mvjePasKeyRing*
- TRUSTPASS=password
- TRUSTTYPE=JCERACFKS
- USERID=*PasUserId*

Grant access to CERTAUTH in a KeyRing

Depending on your security setup, grant access to one of the following facilities:

- If RDATALIB is active on your system, grant access to PE CLASS RDATALIB:

```
<zosConnectUserId>.<ringName>.LST user(<zosConnectUserId>)
<mvjePasUserId><ringName>.LST user(<mvjePasUserId>)
```

- If RDATALIB is *not* active on your system, grant access to PE CLASS(FACILITY) IRR.DIGTCERT.LIST or IRR.DIGTCERT.LISTRING:

```
PE CLASS(FACILITY) ID(<mvjePasUserId>, <zosConnectUserId>) IRR.DIGTCERT.LIST
or
PE CLASS(FACILITY) ID(<mvjePasUserId>, <zosConnectUserId>) IRR.DIGTCERT.LISTRING
```

Where to go from here

To complete setting up z/OS Connect EE and Liberty JVMs, complete the procedures in [Enabling features in the server.xml file](#).

Adding BMC AMI OpsMJE program properties

Use the following procedure to authorize BMC AMI Ops Monitor *for Java Environments* in the program properties table (PPT).

1. In the PARMLIB member SCHEDEX, specify the following syntax:

```
PPT PGMNAME(MJE9INIT) KEY(4)
```

2. Refresh the PPT.

Related topics

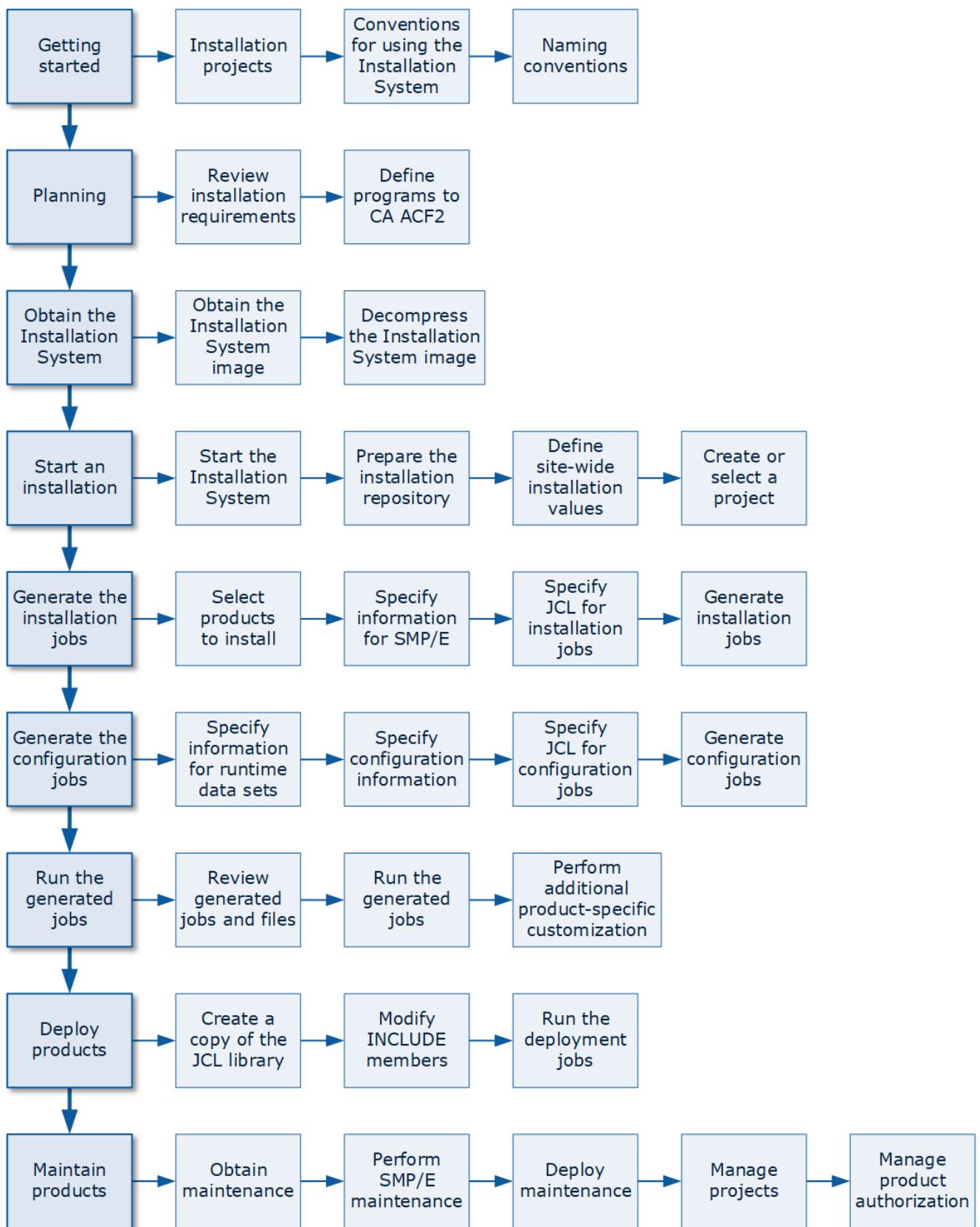
[Planning](#)

Installing

The BMC AMI Ops Monitor *for Java Environments* product operates in a product address space (PAS). When you install and customize the product, you can take advantage of BMC AMI Ops services, connect to Java environments, and enable the product's features. You can access Help for the views and view fields during the process. To access Help for a field, move your cursor to the field, and press the Help key (usually **F1**).

You use the Installation System to install and maintain most BMC AMI Cost products, BMC AMI Data *for Db2* products, BMC AMI Data *for IMS* products, BMC AMI Ops products, and BMC AMI Security products. After gathering information, the Installation System generates all of the jobs that you need to install your products.

Use the following task map as a quick reference for understanding the Installation System and completing an installation. For more information, use the links in the table below the figure or go to [Installation System](#).



Item	More information
Installation projects	Installation projects
Conventions for using the Installation System	Conventions for using the Installation System
Naming conventions	Naming conventions
Planning	Planning
Review installation requirements	Review installation requirements
Define programs to CA ACF2	CA ACF2 usage
Obtain the Installation System	Obtaining the Installation System
Obtain the Installation System image	Methods for obtaining the Installation System image
Decompress the Installation System image	Decompressing the Installation System image
Start an installation	Starting an installation
Start the Installation System	Starting the Installation System
Prepare the installation repository	Preparing the Installation System repository
Define site-wide installation values	Defining or modifying site-wide default values

Item	More information
Create or select a project	Creating and selecting a project
Generate the installation jobs	Generating installation jobs
Select products to install	Selecting products to install
Specify information for SMP/E	Specifying SMP/E settings
Specify JCL for installation jobs	Specifying JCL values for generated installation jobs
Generate installation jobs	Generating the installation JCL
Generate the configuration jobs	Generating configuration jobs
Specify information for runtime data sets	Specifying runtime data set information
Specify configuration information	Specifying product configuration information
Specify JCL for configuration jobs	Specifying JCL values for generated configuration jobs
Generate configuration jobs	Generating the configuration JCL
Run the generated jobs	Running the generated jobs
Review generated jobs and files	Reviewing generated documentation members

Item	More information
Run the generated jobs	To run the generated jobs
Perform additional product-specific customization	Customizing after installation
Deploy products	Deploying products to other subsystems, LPARs, and sysplexes
Create a copy of the JCL library	Copying your JCL library
Modify INCLUDE members	Modifying INCLUDE members
Run the deployment jobs	Running the deployment jobs
Maintain products	Maintaining
Obtain maintenance	Task summary for applying maintenance
Perform SMP/E maintenance	Task summary for applying maintenance
Deploy maintenance	Deploying maintenance to BMC product runtime data sets
Manage projects	Managing projects
Manage product authorization	Authorizing

Installing the OpsMJE z/OS Connect EE Interceptor

To enable BMC AMI Ops Monitor *for Java Environments* to collect real-time z/OS Connect EE data, you must install and set up the OpsMJE z/OS Connect EE Interceptor.

Important

The OpsMJE z/OS Connect EE Interceptor (previously called the API Requestor Interceptor). In [\(BMC.AMIOPS.SPE2204\)](#) the OpsMJE z/OS Connect EE Interceptor was updated to collect API provider data.

If you previously installed the OpsMJE z/OS Connect EE Interceptor, you need to update or reinstall it to obtain the updates for [\(BMC.AMIOPS.SPE2204\)](#). Depending on your setup, use one of the following methods:

- If you previously installed the OpsMJE z/OS Connect EE Interceptor by using symlink, copy the new API provider code to the symlink location. When z/OS Connect EE restarts, the interceptor is activated
- If you previously installed the OpsMJE z/OS Connect EE Interceptor by using the IBM installUtility command, uninstall and install the mjeZconnInterceptor again, and then recycle the PAS.

Use one of the following procedures to install the OpsMJE z/OS Connect EE Interceptor:

- Install the OpsMJE z/OS Connect EE Interceptor by using symlink (preferred method)
- Install the OpsMJE z/OS Connect EE Interceptor by using the IBM installUtility command

Install the OpsMJE z/OS Connect EE Interceptor by using symlink (preferred method)

1. Depending on your setup, perform one of the following actions:

- *If the OpsMJE z/OS Connect EE Interceptor is already installed using symlink*, it is automatically updated the next time the interceptor loads or the server restarts.

Important

If you change the path of the runtime library, you must renew the symlink as follows:

- i. Unlink the symlink using the MJEINUL0 job.
- ii. Renew the symlink by running the MJEINSLO job (as described in [Step 3](#)).

- *If the OpsMJE z/OS Connect EE Interceptor is not installed*, proceed to [Step 2](#).

2. Make sure that the following directories exist:

- \$WLP_USER_DIR/extension
- \$WLP_USER_DIR/extension/lib
- \$WLP_USER_DIR/extension/lib/features

\$WLP_USER_DIR is the directory in which your **server.xml** file resides.

3. Customize and run BBSAMP job MJEINSLO.

- a. Create the following symlink that points to **runtimeLibrary/com.bmc.mje.interceptor.jar**:

```
.....$WLP_USER_DIR/extension/lib/com.bmc.mje.interceptor.jar.....
```

- b. Create the following symlink that points to `runtimeLibrary/com.bmc.mje.zosconnect.intercept.mf`:

```
.....$WLP_USER_DIR/extension/lib/features/com.bmc.mje.zosconnect.intercept.mf.....
```

4. Configure and activate the OpsMJE z/OS Connect EE Interceptor in the `server.xml` file. For more information, see [Configuring the OpsMJE z/OS Connect Interceptor for z/OS Connect EE servers](#).

Best Practice

We recommend copying all SMP/E zFS to the runtime library. The new intercept then runs after every restart.

Install the OpsMJE z/OS Connect EE Interceptor by using the IBM installUtility command

1. Depending on your setup, perform one of the following actions:

- If the OpsMJE z/OS Connect EE Interceptor is already installed using the `installUtility` command, uninstall the `mjeZconnInterceptor`.
For more information about using the `installUtility` command, see
https://www.ibm.com/support/knowledgecenter/SSEQTP_liberty/com.ibm.websphere.wlp.doc/ae/t_install_assets_installUtility.html
-

Important

- You must stop all servers before you uninstall a feature.
- If you previously installed the `mjeZconnInterceptor` using symlink, uninstalling with the `installUtility` removes the symlink.

- If the OpsMJE z/OS Connect EE Interceptor is not installed, proceed to [Step 2](#).

2. Customize and run MJEINES1 to install the `mjeZconnInterceptor` using `installUtility`.
3. Configure and activate the OpsMJE z/OS Connect EE Interceptor in the `server.xml` file. For more information, see [Configuring the OpsMJE z/OS Connect Interceptor for z/OS Connect EE servers](#).

Related topic

[Installing](#)

Customizing after installation

After installing the product (as explained in the the [Installation System documentation](#)), complete the following tasks to prepare the product for use:

Task	Action	Reference
1	Specify SMF options.	Enabling SMF record collection
2	Configure JMX and Health Center for each target JVM that you want to monitor.	Configuring JMX and IBM Health Center
3	Enable features in the server.xml for every server that you want to access	Enabling features in the server.xml file
4	Review and define PAS parameters for the product.	Reviewing and defining BMC AMI OpsMJE PAS parameters
5	Start the PAS.	Starting the BMC AMI OpsMJE PAS
6	Access the product.	Accessing BMC AMI OpsMJE
7	Confirm product setup.	Confirming product set up with the EZJE menu
8	Establish security for data that your product views access, and for the commands that you issue against that data.	Managing security for BMC AMI Ops products 
9	Set up JVM targets.	Setting up JVM targets
10	(BMC.AMIOPS.SPE2110)  Set up a default REST profile	Using default JVM profiles to collect JMX data

Enabling SMF record collection

Use the following procedure to specify IBM System Management Facility (SMF) exits for collecting SMF records, and where to write SMF data. BMC AMI Ops Monitor for Java Environments can collect SMF records when exit IEFU84 is invoked for STC and JESx.

To enable SMF record collection

1. On the **COMMAND** line, type **D SMFO** to list the exit specifications for your system.

Notes

- By default, all exits are invoked for a statement if no exits are defined for that statement.
 - If NOEXIT is specified, no exits are invoked.

- 2. Search for the following statements:**

- SYS(EXITS(IEFU84))
 - SUBSYS(ssss,EXITS(IEFU84)), where ssss is STC, JES2, or JES3

3. If you did not find these statements, specify IEFU84 in the SMF parmlib member (SMFPRMxx). Specify IEFU84 on the EXITS option of either the SYS or SUBSYS parameter.

Notes

- In SMFPRMxx, SYS defines global exit specifications. You can optionally use the SUBSYS parameter to override specific subsystems.
 - Exercise caution when defining exits. Ensure that you *do not inadvertently remove any exits that are already defined*.

4. Specify the following Java Batch Toolkit for z/OS (JZOS) environment variables:

Note

To set these variables as the default for JZOS, specify the values in `/etc/profile`.

IBM product	Syntax to specify
	<pre> • HJV_JZOS_JVM_SMF_LOGGING_INTERVAL=n (seconds) • export HJV_JZOS_JVM_SMF_LOGGING • export HJV_JZOS_JVM_SMF_THREADS • export HJV_JZOS_JVM_SMF_LOGGING_INTERVAL • export HJV_JZOS_JVM_SMF_THREADS_NATIVE_ID =true • </pre>
IMS 14 or later	<p>In the DFSENVXX member for IMS JMP:</p> <pre> • </pre> <p>JLEOPT=N SMFINTERVAL=<nnnn> (milliseconds)</p> <pre> • </pre>

Configuring JMX and IBM Health Center

Java address spaces need to communicate with the BMC AMI Ops Monitor *for Java Environments* PAS to collect JMX data and Health Center data.

In order to collect JMX data and Health Center data for a JVM, you need to configure the JVM by adding Java properties to the JVM profile.

Use the following procedures to configure JMX and the Health Center for each target JVM that you want to monitor.

To configure JMX for a JVM

Use one of the following procedures:

- To configure JVMs in the JVM startup command
 - a. In the JVM profile, specify the following Java properties for each JVM that you want JMX to monitor:

```

-Djaxm.management.builder.initial= (Specify this property for WAS (WebSphere Application
Server) JVMs only. Ensure that there is a space after the equals (=) sign)
-Dcom.sun.management.jmxremote
-Dcom.sun.management.jmxremote.port=<nnnn> (Specify any port number that is not currently used.
The port number can be greater than 1024, or zero.)
-Dcom.sun.management.jmxremote.authenticate=false
-Dcom.sun.management.jmxremote.ssl=false
-Djava.rmi.server.hostname=<hostName>
..... 
```

⚠ Note

You must define a unique port number for each JVM that you want to monitor.

- To configure JVMs using your JMX configuration file
 - a. In the JVM startup command, specify the following string:

```
-Dcom.sun.management.config.file=<filePath>
```

Replace *filePath* with the location of your JMX configuration file (such as **/MyDirectory/MyJmxConfigFile**)

- b. In your configuration file, specify the following Java properties:

```
javajava.management.builder.initial= (Specify this property for WAS (WebSphere Application Server)
JVMs only. Ensure that there is a space after the equals (=) sign)
com.sun.management.jmxremote
com.sun.management.jmxremote.port=<nnnn> (Specify any port number that is not currently used.
The port number can be greater than 1024, or zero.)
com.sun.management.jmxremote.authenticate=false
com.sun.management.jmxremote.ssl=false
java.rmi.server.hostname=<hostName>
```

Note

You must define a unique port number for each JVM that you want to monitor.

Tip

For more information about setting up JMX configuration parameters for different JVM types, see the Knowledge Article [000102079](#). You can access the Knowledge Base directly at <http://www.bmc.com/available/search-kb.html> or from the BMC Support Central website (<http://www.bmc.com/support>). In addition, you can refer to the documentation from your JVM application.

Note

To enable collection of CPU consumption data on IBM CICS JVMs, ensure that the following JVM startup option is defined:

```
-XX:+EnableCPUMonitor
```

For more information, see the IBM documentation on configuring CICS.

To configure the Health Center in the JVM startup command

Note

If you are configuring Health Center on a z/OSMF JVM, see [Configuring Health Center on z/OSMF JVMs](#).

1. In the JVM profile, specify the following Health Center properties for each JVM that you want to monitor:

```
-Xhealthcenter:level=off,port=<nnnnn>,transport=jrmp
-Dcom.ibm.diagnostics.healthcenter.data.profiling=off
```

⚠ Notes

Consider the following information:

- Specifying the port is optional. The Health Center agent will start looking for an available port from port 1972 (or the specified port) for 100 ports.
- Setting level=off specifies that the agent can start collecting Health Center information only when the MJE JVM connects. Alternatively, to collect as many loaded classes as possible, start the agent with level=full. You might want to set level=full if setting level=off does not provide the required loaded classes.

Configuring Health Center on z/OSMF JVMs

To configure Health Center on z/OSMF JVMs, you need to override the values specified in the JVM profile (**jvm.options**) and the **server.xml** file.

1. Create the following files in the z/OSMF configuration directory:

- **local_override.cfg**, which overrides the Health Center properties specified in the **jvm.options** file
- **server_override.xml**, which overrides the features specified in the **server.xml** file

2. In the **local_override.cfg** file, specify the following line:

```
..... -Xhealthcenter:level:off,transport:jrmp,port=<nnnn>
```

⚠ Notes

Consider the following information:

- Specifying the port is optional. The Health Center agent will start looking for an available port from port 1972 (or the specified port) for 100 ports.
- Setting level=off specifies that the agent can start collecting Health Center information only when the MJE JVM connects. Alternatively, to collect as many loaded classes as possible, start the agent with level=full. You might want to set level=full if setting level=off does not provide the required loaded classes.

z/OSMF merges the **local_override.cfg** file into the **jvm.options** file.

3. In the **server_override.xml** file, specify the following features:

```
.....<server>
  <featureManager>
    <feature>monitor-1.0</feature>
    <feature>restConnector-2.0</feature>
  </featureManager>
</server>
```

z/OSMF processes the **server_override.xml** file in addition to the **server.xml** file.

 **Note**

The monitor-1.0 feature is optional. If the z/OSMF user ID is the same as the server ID, you can include this feature for more efficient processing.

Related topics

[Configuring JMX and IBM Health Center](#)

[Enabling features in the server.xml file](#)

Enabling features in the server.xml file

To enable data collection on IBM z/OS Connect EE and IBM WebSphere Liberty servers, update the **server.xml** file for *every server* that you want to access.

Perform the following procedures to update the **server.xml** file:

- Updating the feature manager section
- Configuring the audit interceptor for z/OS Connect EE servers
- Configuring the authorization interceptor for z/OS Connect EE servers
- Configuring the OpsMJE z/OS Connect Interceptor for z/OS Connect EE servers

 **Tip**

If you are experiencing PAS authorization issues, you can add the following line to the SAF security section in the **server.xml**:

```
<safAuthorization racRouteLog="ASIS"/>
```

This attribute enables the ICH408I message, which identifies the blocked resource.

Related topics

[httpEndpoint considerations](#)

[Customizing after installation](#)

Updating the feature manager section

In the feature manager section, add the relevant features for your server type:

Server type	Required feature
z/OS Connect EE	batchSMFLogging1.0
	restConnector-2.0
	zosConnectCommands-1.0
	apiRequester-1.0
Liberty	restConnector-2.0

 **Note**

If you are specifying features for a z/OSMF JVM, see [Configuring Health Center on z/OSMF JVMs](#).

Example

The following example shows the feature manager section of the **server.xml** file.

```
.....
VIEW      /home/bitgxt/wlp/servers/mjezapir/server.xml
Command ==> -----
***** *****
000001
000002 <server description="api requestor">
000003
000004
000005    <!-- Enable features -->
000006    <featureManager>
000007        <feature>restConnector-2.0</feature>
000008        <feature>batchSMFLogging-1.0</feature>
000009        <feature>zosconnect:apiRequester-1.0</feature>
000010        <feature>zosconnect:zosConnectCommands-1.0</feature>
000011    </featureManager>
.....
```



For more information, view the Quick Course
[Set MVJE and Liberty servers to gather JMX data using the REST interface](#) .

Related topics

[Enabling features in the server.xml file](#)

[Configuring the audit interceptor for z/OS Connect EE servers](#)

[Configuring the authorization interceptor for z/OS Connect EE servers](#)

[httpEndpoint considerations](#)

Configuring the audit interceptor for z/OS Connect EE servers

To enable z/OS Connect EE servers to collect Version 2 of IBM SMF 123 records, you need to configure the audit interceptor in the **server.xml** file.

1. Add the following string to the file:

```
<zosconnect_auditInterceptor id="auditInterceptor" apiProviderSmfVersion="2"/>
```

Example

The following example shows the basic audit interceptor configuration:

```
000078 <!-- Audit interceptor configuration-smf -->
000079 <zosconnect_auditInterceptor id="auditInterceptor" sequence="1"/>
000080 <zosconnect_authorizationInterceptor id="authInterceptor" sequence="2"/>
000081 <zosconnect_auditInterceptor id="auditInterceptor" apiProviderSmfVersion="2"/>
```

2. *(Optional)* To enable z/OS Connect EE servers to collect information about request and response headers, take the following steps:

- a. Add request header information to the audit interceptor configuration:

```
apiProviderRequestHeaders="<requestHeaderName1>, <requestHeaderName2>, <requestHeaderName3>,
<requestHeaderName4>"
```

Notes

Consider the following information:

- You can define a maximum of four request header names.
- You can define standard request header names (such as, **accept** or **content-type**) or custom request header names. To define custom request header names, first map data to request header names in your API and deploy the API to the z/OS Connect EE server.
- For z/OS Connect EE to capture request header information, ensure that the specified request headers are contained in the HTTP request.

Example:

```
curl -X GET --header '<requestHeaderName1>: <requestHeaderValue1>' 'http://
sjsd:9999/CatalogManager/items?startItemID=10'
```

- b. Add response header information to the audit interceptor configuration:

```
apiProviderResponseHeaders="<responseHeaderName1>, <responseHeaderName2>, <responseHeaderName3>,
<responseHeaderName4>"
```

Notes

Consider the following information:

- You can define a maximum of four response header names.
- z/OS Connect EE cannot capture standard response headers. You must map data to custom response header names in your API and deploy the API to the z/OS Connect EE server. Then you can define the response header names in the **server.xml**.

Example

The following example shows the audit interceptor configuration with request and response headers defined:

```
000078  <!-- Audit interceptor configuration-smf -->
000079  <zosconnect_auditInterceptor id="auditInterceptor" sequence="1"/>
000080  <zosconnect_authorizationInterceptor id="authInterceptor" sequence="2"/>
000081  <zosconnect_auditInterceptor id="auditInterceptor" apiProviderSmfVersion="2">
000082  apiProviderRequestHeaders="accept,content-type"
000083  apiProviderResponseHeaders="retcode,respmsg"/>
```

Related topics

[Enabling features in the server.xml file](#)

[Updating the feature manager section](#)

[Configuring the authorization interceptor for z/OS Connect EE servers](#)

[Configuring the OpsMJE z/OS Connect Interceptor for z/OS Connect EE servers](#)

[httpEndpoint considerations](#)

Configuring the authorization interceptor for z/OS Connect EE servers

Use the following procedure to configure the authorization interceptor for z/OS Connect EE servers.

Before you begin

Verify that the following items are set up:

- SAF authorization for z/OS Connect EE servers
- z/OS Connect EE keyring

To configure the authorization interceptor

1. Specify the following string in the **ssl id** tag:

```
.....
    clientAuthenticationSupported="true"
.....
```

Example

```
<ssl id="DefaultSSLSettings" keyStoreRef="defaultKeyStore"
      clientAuthenticationSupported="true" sslProtocol="TLSv1.2"

      trustStoreRef="defaultTrustStore" />
```

2. Define the authorization interceptor in the interceptor list:

Example

```
<zosconnect_auditInterceptor id="auditInterceptor" sequence="1" apiProviderSmfVersion="2"/>
<zosconnect_authorizationInterceptor id="authorizationInterceptor" sequence="2"/>
<zosconnect_zosConnectInterceptors id="interceptorList"
      interceptorRef="authorizationInterceptor, auditInterceptor"/>
```

3. Define the **zosconnect_zosConnectManager** tag as follows:

- Connect the MVJE PAS user ID to a group in globalAdminGroup,
- Set **requireAuth** to **true**.
- Set **requireSecure** to **true**.

Example

```
<zosconnect_zosConnectManager
      globalInterceptorsRef="interceptorList"
      globalAdminGroup="ZCONADM,MVJE"
      globalOperationsGroup="OPR"
      globalInvokeGroup="ALLZUID"
      globalReaderGroup="ALLZUID"
      setUTF8ResponseEncoding="true"
      requireAuth="true"
      requireSecure="true"
      />
```

Related topics

Enabling features in the server.xml file

Updating the feature manager section

Configuring the audit interceptor for z/OS Connect EE servers

Configuring the OpsMJE z/OS Connect Interceptor for z/OS Connect EE servers

httpEndpoint considerations

Configuring the OpsMJE z/OS Connect Interceptor for z/OS Connect EE servers

To enable z/OS Connect EE servers to collect real-time data from the OpsMJE z/OS Connect EE Interceptor, you need to configure the **MjeZconnInterceptor** (OpsMJE z/OS Connect EE Interceptor) in the **server.xml** file.

 **Note**

Make sure that z/OS Connect EE Version 3.0.39.0 or later is installed on the servers.

MjeZconnInterceptor.xml (in ASCII format) is shipped with the product. You can use this XML file as an include element in the **server.xml** file. This XML file contains \${MVJEEVENTPORT}, which is a variable substitute for the listener port in the PAS for BMC AMI Ops Monitor for Java Environments. You must add MVJEEVENTPORT to the **bootstrap.properties** file in the server directory, as explained in the following procedure.

Before you begin

Make sure that the OpsMJE z/OS Connect EE Interceptor is installed. For more information, see [Installing the OpsMJE z/OS Connect EE Interceptor](#).

To add the listener port to bootstrap.properties and include the distributed XML in the server.xml file

1. Ensure that a **bootstrap.properties** file exists in the server directory (where server.xml resides). For more information about adding a bootstrap.properties file, see <https://www.ibm.com/support/knowledgecenter/>.
2. Add the following parameter to the **bootstrap.properties** file:

```
MVJEEVENTPORT=<listenerPortNumber>
```

<listenerPortNumber> is the event port number as specified in MJEINIxx (EVENTPORT=<listenerPortNumber>).

3. (Optional) To control the frequency in which duplicate error messages are displayed in the server log and MVS Console, specify the following parameters in the **MjeZconnInterceptor.xml** file:
 - msgMax—specifies the maximum number of times that duplicate error messages are displayed in the log within the time frame specified for the msgSuspension parameter
 - msgSuspension—specifies the time frame

By default, up to three duplicate error messages are displayed in a 30-minute time frame.

Example

```

<usr_mjeZconnInterceptor id="mjeZconnInterceptor" port="${MVJEEVENTPORT}" debug="0" msgMax="3"
msgSuspension="30"/>

```

4. In the **server.xml** file, add the following string:

```

<include location="/<runtimeLibrary>/MjeZconnIntercept.xml" optional="true"/>

```

Example

The following example specifies the **MjeZconnIntercept.xml** include from the **/home/userID/v33** runtime library.

```

<include location="/home/userID/v33/MjeZconnIntercept.xml" optional="true"/>

```

To activate the OpsMJE z/OS Connect EE Interceptor

1. Define the **MjeZconnInterceptor** in the intercept list specified in **<zosconnect_zosConnectInterceptors>**:

Example

```

<zosconnect_zosConnectInterceptors id="interceptorList"
interceptorRef="mjeZconnInterceptor,auditInterceptor,
authorizationInterceptor"/>

```

2. Make sure that your interceptor list is specified as the global interceptor reference.

Example

```

<zosconnect_zosConnectManager
globalInterceptorsRef="interceptorList"
. . .
/>

```

For more information about defining the **zosconnect_zosConnectManager** tag, see [Configuring the authorization interceptor for z/OS Connect EE servers](#).

3. Restart the z/OS Connect EE server.

When the interceptor is successfully activated, the following messages are displayed in the server messages.log:

- MJEZC001I
- MJEZC064I
- MJEZC065I
- MJEZC003I

Related topics

- [Enabling features in the server.xml file](#)
- [Updating the feature manager section](#)
- [Configuring the audit interceptor for z/OS Connect EE servers](#)
- [Configuring the authorization interceptor for z/OS Connect EE servers](#)
- [httpEndpoint considerations](#)
- [Installing the OpsMJE z/OS Connect EE Interceptor](#)

httpEndpoint considerations

If the default httpEndpoint is bound to a VIPA address, a shared port, or a specific host name, BMC AMI Ops Monitor for Java Environments is unable to identify the replying server. This issue causes functions to fail or acquire nonsensical data.

You can resolve the issue by adding an additional httpsEndpoint that is unique to the server and host.

Example

The following example adds port 8385 as a new httpsEndpoint.

```
<httpEndpoint id="adminHttpEndpoint" host="*" httpPort="-1" httpsPort="8385" />
```

Related topics

- [Enabling features in the server.xml file](#)
- [Configuring the audit interceptor for z/OS Connect EE servers](#)
- [Configuring the authorization interceptor for z/OS Connect EE servers](#)

Reviewing and defining BMC AMI OpsMJE PAS parameters

The BMC AMI Ops Monitor for Java Environments PAS requires the following types of parameters:

- Product initialization (INI)
- Environmental (ENV)

- Started task

During installation and customization, default values are automatically defined for the INI, ENV, and started PAS parameters. The following procedure explains how to review the defined values *before* you start the BMC AMI OpsMJE PAS. Alternatively, you can review and modify the PAS parameters *after* setup on the PARMEDT and PASPARM views. For more information, see [Viewing or editing PAS parameters with the PARMEDT view](#).

To review or define PAS parameters before you start the BMC AMI OpsMJE PAS

1. To review INI and ENV parameters, view the following members in the BBPARM library:
 - MJEINI00 (INI)
 - MJEENV00 (ENV)
2. (*Optional*) To modify the defined values, copy the member that you want to modify to the UBBPARM library and make the required changes to the copied member.
3. To review the started task parameters, review the PAS proc in the STGSAMP library (member prefix MVJ*).
4. (*Optional*) To modify the defined values, edit the PAS proc.

The following topics describe the PAS parameters:

- Product initialization parameters
- Environmental parameters
- Started task parameters

Related topics

[Starting the BMC AMI OpsMJE PAS](#)

[Customizing after installation](#)

Product initialization parameters

Default values are assigned to the product initialization parameters during installation and customization of BMC AMI Ops Monitor for Java Environments. For more information about changing the default values, see [Reviewing and defining BMC AMI OpsMJE PAS parameters](#). You can also view the sample MJEINI00 member.

The following table describes the product initialization parameters:

Parameter	Default value	Description
ARTIME=nn	5	<p>Number of minutes that BMC AMI OpsMJE should store z/OS Connect EE Interceptor information</p> <p>You can specify values 1 through 15.</p> <p>This number affects the amount of displayed data when you view z/OS Connect Current data in the z/OS Connect EE current views.</p> <div style="border: 1px solid #f0e68c; padding: 10px; margin-top: 10px;"> <p>⚠️ Important</p> <p>When an API Requester request completes, the data is written to NGL. You can review the data on the ZCONARD, ZCONARDD and ZCONARDZ views.</p> </div>
AUTODISC=[YES NO]	YES NO	<p>Whether to discover new JVMs and JVM threads automatically</p> <p>At startup, the product discovers all JVMs running on the system. AUTODISC controls when to discover new JVMs that are added subsequently:</p> <ul style="list-style-type: none"> • YES (the default for z/OS 2.2 or later) automatically discovers JVMs when they are added. <div style="border: 1px solid #f0e68c; padding: 10px; margin-top: 10px;"> <p>⚠️ Important</p> <p>To use this option, you must be running z/OS 2.2 or later.</p> </div> <ul style="list-style-type: none"> • NO (the default for z/OS 2.1) uses timed discovery, which checks for new JVMs at timed intervals (instead of automatic discovery). <div style="border: 1px solid #f0e68c; padding: 10px; margin-top: 10px;"> <p>⚠️ Important</p> <p>If you select timed discovery, you can change the timed interval and check for new JVMs on demand as explained in Working with timed discovery.</p> </div>
AUTOSSL=[NO xx]	NO	Suffix of the SSL member that you want the Health Center to use

Parameter	Default value	Description
		<p>Valid values are:</p> <ul style="list-style-type: none"> • NO (the default), which adds SSL member MJESSLNO to the target. MJESSLNO contains no SSL parameters. • xx, representing a two-character user-specified suffix of an existing SSL member
AUTOTARGET=[YES NO]	YES	<p>Whether the product should automatically create target definitions for Health Center agents without defined targets</p> <p>Valid values are:</p> <ul style="list-style-type: none"> • YES, which creates a target definition that will exist for the lifetime of the JVM • NO, which tells the product to use only defined targets to collect Health Center data <div style="border: 1px solid #fca; padding: 10px; margin-top: 10px;"> <p>⚠️ Important</p> <p>The product uses the parameters defined in the default target definition MJETGT00 to create the new target profile. If you specify AUTOTARGET=YES, the JMX port value in the default target member must be 0.</p> </div>
DBCSSID= <i>dbcSSID</i>	DC&SYSCLOSE	<p>SSID of the BMC Execution Component <i>for z/OS</i> (DBC) subsystem on which the NGL instance is running</p> <div style="border: 1px solid #fca; padding: 10px; margin-top: 10px;"> <p>⚠️ Important</p> <p>The BMC Execution Component <i>for z/OS</i> was previously named Db2 Component Services.</p> </div>
DEBUGLVL= <i>nnn</i>	1	<p>Level of debugging</p> <p>Valid values are 0 through 255.</p> <div style="border: 1px solid #fca; padding: 10px; margin-top: 10px;"> <p>⚠️ Important</p> <ul style="list-style-type: none"> • You should change the debug level only at BMC Support's request. </div>

Parameter	Default value	Description
		<ul style="list-style-type: none"> If you specify a value higher than 255, the debug level is set to 255.
(PTF BPF0457 applied) EMCSCNT= <i>n</i>	1	<p>Number of EMCS consoles to be activated on PAS startup Valid values are 1 through 9.</p>
(PTF BPF0457 applied) EMCSPREF= <i>prefix</i>	OPSMJE	<p>Prefix of the EMCS console name This value must be 6 characters in length.</p>
EVENTPORT= <i>listenerPortNumber</i>	No default	<p>Listener port for unsolicited messages from the MJEJVM to the PAS</p> <div style="border: 1px solid #4CAF50; padding: 5px; margin-top: 10px;"> ✓ Tip You can get this port from the TCP/IP port assigners. </div>
EVTASK= <i>nn</i>	3	<p>Specifies the number of zIIP enabled storage request blocks (SRBs) to process, accept, and receive events and other unsolicited messages Valid values are 1 through 75. If you experience dropped sockets when the MJEJVM is communicating with the PAS, increase this value to reduce the risk of losing data. BMC recommends specifying the default value if the SOMAXCONN parameter in the OMVS segment is set above 300.</p>
(BMC.AMIOPS.SPE2204) ↗ EVTZIIP=[YES NO]	NO	<p>Whether to run the event listener on zIIP</p> <div style="border: 1px solid #4CAF50; padding: 5px; margin-top: 10px;"> ⚠ Important Running the event listener on zIIP can cause backlogs in TCP. Due to zIIP requirements, the same instance of the listener must read and route the incoming messages. When the traffic is low, this doesn't cause a problem. </div>

Parameter	Default value	Description
		<p>However, in high volume situations (such as z/OS Connect EE intercepts) excess in the backlog can cause TCP to reject messages.</p> <p>Valid values are:</p> <ul style="list-style-type: none"> • YES, runs the event listener on zIIP • NO, runs a different version of the event listener that is not zIIP eligible. This version has one listener that accepts sockets and gives multiple instances of the router. Specifying NO keeps the backlog to a minimum.
HCPORTEND=nnnn	HCPORTSTART+ 100	<p>The last port for which the product should search for Health Center agent listeners</p> <p>You can specify any TCP/IP port on which you have or expect to have an active Health Center agent.</p> <p>⚠️ Important This value must be higher than the HCPORTSTART value.</p>
HCPORTSTART=nnnn	1972	<p>The starting port for which the product should search for Health Center agent listeners</p> <p>You can specify any TCP/IP port on which you have or expect to have an active Health Center agent.</p>
HEALTHCENTER=[YES NO]	YES	Whether the product should start the Health Center port scan and collect Health Center data
JVMDISC=n	10	<p>Discovery cycle in seconds</p> <p>Valid values are 1 through 999.</p> <p>⚠️ Important</p>

Parameter	Default value	Description
		This parameter is not used if AUTODISC=YES.
(BMC.AMIOPS.SPE2110) JMXSEARCH=[YES NO]	YES	<p>Whether to search for JMX ports when Health Center connects</p> <p>If you specify YES, when Health Center connects, if the JVM doesn't match a specific profile BMC AMI OpsMJE takes one of the following actions:</p> <ul style="list-style-type: none"> For non-Liberty JVMs, BMC AMI OpsMJE uses the default JVM profile and attempts to get JMX data from each port that the monitored JVM is listening on. For Liberty JVMs, if a _DEFREST profile is defined BMC AMI OpsMJE uses the security defined in the profile to request JMX data from the REST interface. For more information, see Using default JVM profiles to collect JMX data. <p>When JMX data is returned, BMC AMI OpsMJE ends the search.</p> <p>If you specify NO, BMC AMI OpsMJE only searches for JMX ports for non-liberty JVMs with com.sun.management.jmxremote.port=0 defined.</p> <p>Important</p> <p>If a port is defined as shared in the port table, BMC AMI OpsMJE doesn't request JMX data from the port when searching for a port. If the port is defined in the TGTPROF definition, data is requested.</p>
LSDATACLAS= <i>dataClassName</i>	No default	For DFSMS allocation, the data class that the product sends to NGL for allocating logset data sets
LSMGMTCLAS= <i>managementClassName</i>	No default	For DFSMS allocation, the management class that the product sends to NGL for allocating logset data sets
LSPREFIX= <i>hlq</i>	No default	<p>High-level qualifier for BMC AMI OpsMJE logsets</p> <p>The product will append this HLQ to the logset name for different record types.</p>

Parameter	Default value	Description
		<p>For more information, see Working with logsets.</p> <p>If this parameter is already specified, but a new LSPREFIX is required, perform the following steps to apply the new LSPREFIX:</p> <ol style="list-style-type: none"> 1. Modify LSPREFIX in the active INI member and save it. 2. Stop the BMC AMI OpsMJE PAS. 3. Restart the NGL agent. 4. Delete logset definitions with the old LSPREFIX. 5. Start the BMC AMI OpsMJE PAS.
LSSTORCLAS= <i>storeClassName</i>	No default	For DFSMS allocation, the store class that the product sends to NGL for allocating logset data sets
LSVOLSER= <i>volumeName</i>	No default	<p>Volume name for allocating the NGL log file</p> <div style="border: 1px solid #fca; padding: 10px; margin-top: 10px;"> <p>⚠️ Important</p> <p>The volume is not checked for a valid mounted volume on the MVS system. Allocating the volume might fail if the volume is not valid, or the volume is overridden by a DASD management routine during allocation.</p> </div>
MAXDUMP= <i>n</i>	5	<p>The maximum number of dumps that the product should take</p> <p>Valid values are 1 though 9.</p>
MJEENV= <i>xx</i>	00	<p>Suffix of the MJEENV<i>xx</i> data set</p> <p>This data set defines environmental variables.</p>
MJEJTB=00	00	<p>Suffix of the MJEJTB<i>xx</i> data set</p> <p>This data set defines programs that you can use to start a JVM.</p>

Parameter	Default value	Description
MJEJVMTO=nnn	60	Timeout value (maximum number of seconds that the PAS should wait for a response from the MJEJVM)
MJELOG=xx	00	<p>Suffix of the logset members that you want BMC AMI OpsMJE to use</p> <p>Logset members are named MJELGnxx, where <i>n</i> represents the type of data contained in the logset. You can edit the logset members if you need to change default allocations or retentions. For more information, see Working with logsets.</p>
MJESHPATH=path	No default	<p>Path for the shell script (RunMjeJvm.sh) that generates the MJEJVM</p>
MJESTACK=jobName	No default	<p>(Optional) Job name of the TCP/IP stack</p> <p>BMC AMI OpsMJE uses this jobname to communicate between the MJEJVM and z/OS Connect EE.</p> <p>By default, BMC AMI OpsMJE uses the jobname of the primary stack. If you are running BMC AMI OpsMJE in a multi-stack TCP environment and you want BMC AMI OpsMJE to use a specific stack, specify a value for this parameter.</p>
MJETGT=xx	00	<p>Suffix of the MJETGTxx target data set</p> <p>This data set defines target-specific parameters. A default target dataset is available when you start the PAS for automatic discovery of Health Center and traditional WebSphere Application Server (WAS) servant JMX targets.</p>
MJEWLT=xx	00	<p>Suffix of the MJEWLT xx data set</p> <p>This data set defines the JVMs that are defined on the Watch List.</p>
MONTCBMAX=nnn	780	<p>Number of subtasks active in the JVM</p> <p>If MONTCBMAX is exceeded for a JVM, the product issues message MJETCK22W or MJETCH02W for each affected JVM.</p>

Parameter	Default value	Description
		To avoid losing data at JVM shutdown, increase the value of MONTCBMAX to 110% of the maximum number of threads that you want to monitor on the JVM.
MVHISTORY=[YES NO]	YES	<p>Sets the default for BMC AMI Ops Infrastructure (BMC AMI Ops) history collection for MJEJVM targets</p> <p>You can override this default when defining individual targets.</p> <p>Valid values are:</p> <ul style="list-style-type: none"> • YES (the default), which collects history data • NO, which does not collect history data
MVMONMV=[M N]	M	<p>Whether the product should join enclaves to track CPU usage that does not involve IBM z Systems Integrated Information Processors (zIIPs)</p> <p>Valid values are:</p> <ul style="list-style-type: none"> • M, which joins enclaves for all BMC AMI OpsMJE code • N, which joins only as required
NGLMSGLVL= <i>nn</i>	8	<p>Message level for NGL debugging</p> <div style="border: 1px solid #f0e68c; padding: 10px; margin-top: 10px;"> <p>⚠️ Important</p> <p>Specifying a lower number might reduce the amount of messages that NGL produces.</p> </div>
NGLPIID= <i>nglPiid</i>	MVJ1	Product instance identifier (PIID) for the NGL agent
NGLREFRESH=[YES NO]	YES	<p>Whether the product can stop or restart the NGL agent</p> <p>The NGL agents must be restarted if BMC AMI OpsMJE changes the index for a record, or logset definitions.</p> <p>Valid values are:</p>

Parameter	Default value	Description
		<ul style="list-style-type: none"> YES (the recommended value), which automatically restarts the NGL agent if BMC AMI OpsMJE determines that restart is required following a change NO, which does not automatically restart the NGL agent. If you specify NO, you must manually restart the NGL agent. You might want to specify NO if you are sharing an NGL PIID with another product. <div style="border: 1px solid #f0e68c; padding: 10px; margin-top: 10px;"> <p>⚠️ Important</p> <p>Queries using any changed indexes result in data that does not match the query being returned, or no data at all—depending on the change.</p> </div>
NGLRETRY= <i>nn</i>	32	Following an initial failed attempt, the number of times the product will try again to connect to the DBC or NGL subsystem
PASCON= <i>context</i>	(<i>PTF BPF0420 applied</i>) & <i>SYSNAME</i>	Alternate context for the BMC AMI OpsMJE PAS
REPORT=[ALL TGT NO]	No default	<p>Whether to collect interval JVM CPU data from NGL logsets</p> <p>Data is collected each time the JINV is updated. Valid values are:</p> <ul style="list-style-type: none"> ALL, which collects all interval JVM CPU data TGT, which collects interval JVM CPU data only for jobs that are MVI targets <div style="border: 1px solid #f0e68c; padding: 10px; margin-top: 10px;"> <p>⚠️ Important</p> <p>This option requires SMF interval data.</p> </div> <ul style="list-style-type: none"> NO, which does not collect any interval JVM CPU data
SMF121=[YES NO]	YES	Whether to collect SMF 121-1 records for JZOS
SMF29=[YES NO]	YES	Whether to collect SMF 29-2 records for IMS14

Parameter	Default value	Description
(BMC.AMIOPS.SPE2110) TRACEPATH= <i>path</i>	OUTPATH value specified in MJEENV00	<p>Path for Stack Trace file</p> <p>You can use the PATh primary command on the THRDTLZ and THRDCON views to temporarily update this path without modifying the MJEINIO0 member. For more information, see Requesting a stack trace for a thread.</p>

Related topic

[Reviewing and defining BMC AMI OpsMJE PAS parameters](#)

Environmental parameters

Default values are assigned to the environmental parameters during installation and customization of BMC AMI Ops Monitor for Java Environments. For more information about changing the default values, see [Reviewing and defining BMC AMI OpsMJE PAS parameters](#). You can also view the sample MJEENV00 member.

The following table describes the environmental parameters:

Parameter	Default value	Description
_BPX_JOBNAME= <i>jobName</i>	No default	Name for the MJEJVM job
_BPX_SHAREAS=[YES NO]	NO	<p>Whether the spawned child process should run in a separate address space from the shell address space</p> <p>Valid values are:</p> <ul style="list-style-type: none"> • YES, which creates the child process on a subtask in the parent's address space If the request cannot be honored, the child is created in another address space. • NO (the default), which creates the child process in a new address space

Parameter	Default value	Description
<code>_BPXK_MDUMP= jvmDump directory</code>	No default	<p>Location to which Java dumps are written</p> <div style="border: 1px solid #f0e68c; padding: 5px; margin-top: 10px;"> ⚠ Note The directory must already exist. </div>
<code>COREMJETHREADS=nn</code>	No default	<p>Minimum number of threads in the thread pool</p> <p>You can calculate this value as follows:</p> <pre>..... <numberOfMonitoredJMX> * 3 </pre> <div style="border: 1px solid #f0e68c; padding: 5px; margin-top: 10px;"> ⚠ Note This value must be greater than zero, but less than the value of MAXMJETHREADS. </div>
<code>HOLDQSIZE= nn</code>	No default	<p>Maximum number of threads that can be held in the queue, awaiting execution while all threads are busy</p> <p>BMC recommends using the same value for HOLDQSIZE that you used for MAXMJETHREADS.</p>
<code>JAVA_HOME= location</code>	No default	Location of Java 7.1 or later, 64-bit
<code>KEEPALIVESEC= nn</code>	No default	<p>Maximum time in seconds to retain inactive threads in the thread pool</p> <p>The recommended time is 90 seconds.</p>
<code>MAXMJETHREADS=nn</code>	No default	<p>Maximum number of threads allowed in the thread pool</p> <div style="border: 1px solid #f0e68c; padding: 5px; margin-top: 10px;"> ⚠ Note </div>

Parameter	Default value	Description
		<p>This value must be greater than COREMJETHREADS.</p> <p>You can calculate this value as follows:</p> <pre>.....<valueOfCOREMJETHREADS> * 2.....</pre>
MJEPATH= <i>directory</i>	No default	Mount point that you specified for mounting BMC AMI OpsMJE ZFS files
MONINT= <i>nnn</i>	No default	<p>Self-monitoring interval time in seconds</p> <p>The recommended time is 60 seconds.</p>
OUTPATH= <i>mjejvmnnn</i>	No default	<p>Directory in which to write BMC AMI OpsMJE messages</p> <p>Note The directory must already exist.</p>
TCPMJEPORT= <i>portNumber</i>	No default	<p>Port for the product to communicate with the MJEJVM</p> <p>Tip You can get this port from the TCP/IP port assigners.</p>
WLP_DIR= <i>directory</i>	No default	<p>IBM WebSphere Application Server Liberty profile bin (wlp) directory</p> <p>The product uses this directory to locate the clients sub_directory. The sub-directory contains the restConnector.jar file that is used to gather JMX data from Liberty servers.</p>
XMS= <i>initialHeapSize</i>	No default	<p>Initial heap size for the MJEJVM</p> <p>The recommended value is 4096m.</p>

Parameter	Default value	Description
XMX= <i>maximumHeapSize</i>	No default	Maximum heap size for the MJEJVM The recommended value is 4096m.

Related topic

[Reviewing and defining BMC AMI OpsMJE PAS parameters](#)

Started task parameters

Default values are assigned to the started task parameters during installation and customization of BMC AMI Ops Monitor for Java Environments. For more information about changing the default values, see [Reviewing and defining BMC AMI OpsMJE PAS parameters](#).

Parameter	Description
SS= <i>pasSsid</i>	Subsystem ID of the PAS on which you want to run the product
INI=xx	Suffix of the MJEINIxx data set, which contains initialization parameters The default value is 00 unless you changed it in Product initialization parameters .
CAS= <i>casSsid</i>	Subsystem ID of the coordinating address space (CAS) to which the BMC AMI OpsMJE PAS should connect The maximum length is four characters. Because the CAS is started as a separate address space from the BMC AMI OpsMJE PAS, you should initialize the CAS before initializing the PAS.

Related topic

[Reviewing and defining BMC AMI OpsMJE PAS parameters](#)

Starting the BMC AMI OpsMJE PAS

Use the following procedure to start the BMC AMI Ops Monitor *for Java Environments* PAS.

Before you begin

Before you start the PAS, take the following actions:

- Ensure that the CAS is running.
- Ensure that the DBC is running.
- Ensure that you specified the started task parameters defined in [Started task parameters](#).

Starting the PAS

1. From the system operator console, enter the START (or S) command:

```
.....  
S <procName>  
.....
```

procName is the name of the master PAS startup procedure.

 **Notes**

- You can optionally specify additional parameters to define the INI file for the PAS to reference, the PAS SSID, or the CAS SSID in the following format:

```
.....  
S <procName> [INI=<xx>],[SS=<ssid>],[CAS=<casSSID>]  
.....
```

These values override the started task parameters that are defined in the PAS.

- You receive the following message if you start the PAS with no JVM targets defined. If you have not created targets, you can ignore the message.

```
.....  
MJERTGT1W MJETGT00 NOT FOUND RC=00000004  
.....
```

Where to go from here

After setting up the product and starting the PAS, complete the following tasks:

- [Accessing BMC AMI OpsMJE](#)

Related topic

[Stopping the BMC AMI Ops Monitor for Java Environments PAS](#)

Accessing BMC AMI OpsMJE

Use either of the following procedures to access BMC AMI Ops Monitor *for Java Environments* from the windows-mode interface (ISPF based) or the MainView Explorer GUI:

- [Accessing BMC AMI OpsMJE \(windows-mode interface\)](#)
- [Accessing BMC AMI OpsMJE \(MainView Explorer\)](#)

Note

If you are new to BMC AMI Ops interfaces, see [BMC AMI Ops interfaces](#) for full descriptions of both interfaces.

Accessing BMC AMI OpsMJE (windows-mode interface)

In the window-mode interface, you can access the product from the BMC AMI Ops Selection Menu or from PLEX Management.

To access the product from the BMC AMI Ops Selection Menu

1. Run the BMC AMI Ops CLIST.
2. On the BMC AMI Ops **Selection Menu**, select **J (Java Environments)**.
3. On the Context Confirmation panel, complete the fields as described in the following table:

Field	Description
Context	Specify the context that BMC AMI Ops Monitor <i>for Java Environments</i> should use when opening new windows
Screen	Select the view that you want to display at startup. If you leave this field blank, the default EZJE view is displayed.
Confirm	Specify whether to display this view every time BMC AMI OpsMJE starts.

Field	Description
	<p>Valid values are:</p> <ul style="list-style-type: none"> • YES, displays the view selected in the Screen field every time BMC AMI OpsMJE starts • NO, displays the view selected in the Screen field for the current session <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;"> <p>Note</p> <p>If you specify NO, you can make changes by using only the parameters editor.</p> </div>

4. Press **Enter**.

The EZJE menu is displayed.

To access the product from PLEX Manager

1. On the **COMMAND** line, type **CON *PLEXMGR** and press **Enter**.
2. On EZPLEX, hyperlink on **Sum by Area**.
3. On PLEXAREA, hyperlink on the **Number Targets** column next to **JAVA**.
4. Select an active target.



Tip

Active targets are highlighted in green.

The EZJE menu is displayed.

Related topic

[Accessing BMC AMI OpsMJE](#)

Accessing BMC AMI OpsMJE (MainView Explorer)

Use the following procedure to access BMC AMI Ops Monitor *for Java Environments* with MainView Explorer.



Note

You can run MainView Explorer sessions either in a web browser or from a directory on your computer. For more information about starting MainView Explorer and setting a context, see [Using BMC AMI Ops products](#).

To access BMC AMI OpsMJE through MainView Explorer

1. At the Windows security prompt for BMC, click **OK** (or **Yes**).
2. In the **Logon** dialog box, type your TSO user ID and the corresponding password in the **User ID** and **Password** boxes.
3. If the **Allocate user datasets for personal use** check box is available, indicate whether to allocate user data sets to contain your customized views and configurations (instead of saving them to the site-wide data sets):

Note

If you do not see this box, your site administrator disabled allocation of user data sets. You can proceed to [Step 5](#).

- If you do not want to allocate user data sets, clear **Allocate user datasets for personal use** and all boxes below it.
 - If you want to allocate user data sets, select **Allocate user datasets for personal use**.
4. If you selected **Allocate user datasets for personal use** in [Step 3](#), provide the following information:

- a. In the **Template for user datasets** box, specify the template for your data set names.

The template can consist of your TSO prefix (%UPREFIX), your user ID (%USERID), and the data set name (%BBDEF). You can arrange them in any order. Only %BBDEF is required, and it resolves to BBVDEF or BBCDEF (BBVDEF for customized views, and BBCDEF for customized configurations). If you do not specify %BBDEF in your template, BBVDEF or BBCDEF is added to the data set name as the low-level qualifier.

Note

If your site administrator specified a template in the MainView Explorer host server startup procedure, the **Template for user datasets** box and the **Insert token** boxes are grayed out. If you choose to allocate user data sets, they will be named according to the site-defined template.

Examples

The following examples show valid templates and the user data sets that are allocated if the user ID is **MYID01**:

- %USERID.TEST.%BBDEF (or %USERID.TEST) allocates MYID01.TEST.BBVDEF (and BBCDEF).
- PROD.U%BBDEF.%USERID allocates PROD.UBBVDEF.MYID01 (and UBBCDEF).
- %USERID.&SYSNAME..%BBDEF allocates MYID01.SYSC.BBVDEF (on SYSC).

As shown in the last example, including the system variable &SYSNAME. enables you to use the same data set template on different system images.

- b. To insert the %USERID token in the template, select the **Insert token for User ID** box.
- c. To insert the %UPREFIX token in the template, select the **Insert token for User prefix** box.
- d. If the **Insert token for User prefix** box is selected (either by you or because of the site-wide template), type your TSO user prefix in the **User prefix** field.
5. Click **OK**.

MainView Explorer opens in a separate window. The window that contains the splash screen must remain open during the MainView Explorer session. For more information, see [Overview of BMC AMI OpsMJE navigation in MainView Explorer](#).

Where to go from here

Confirming product setup with the EZJE menu

Related topic

[Accessing BMC AMI OpsMJE](#)

Confirming product setup with the EZJE menu

The EZJE menu displays options based on your set up and context. You can use the following procedure to confirm that your product setup is complete.

1. If the EZJE menu is not currently displayed, see [Accessing BMC AMI OpsMJE](#).
2. If any of the options under **Setup & Configuration** are highlighted, take the following actions to complete product set up:
 - a. If the **Parm Members** option is highlighted, product initialization parameters are missing or incomplete. Take one of the following actions:
 - Hyperlink on the **Parm Members** option to update parameters on the PASPARM view. For more information, see [Viewing or editing PAS parameters and SSL members on the PASPARM view](#).
 - Alternatively, you can edit PAS parameter members on the PARMEDT view by hyperlinking on the **Easy Administration** option. For more information, see [Viewing or editing PAS parameters with the PARMEDT view](#).
 - b. If JVM targets are not set up, one of the following options is displayed:
 - **Convert JVM targets**, indicating that no targets are set up, but version 2.1 targets are available for conversion. Clicking on this link displays the JVM Target Conversion Wizard. For more information, see [Converting JVM target definitions](#).
 - **Setup JVM targets**, indicating that no targets are set up. Clicking on this link displays the JVM Add Targets Wizard. For more information, see [Setting up JVM targets](#).
3. Confirm that EZJE includes all of the following sections:
 - All JVM Views
 - NGL Logged Data
 - MVJE Information
 - Setup & Configuration
 - z/OS Connect EE
 - HC Environment

- HC Statistics
- Usage Data (JMX)
- JVM Environment (JMX)

4. If any of the following sections are missing, take the relevant actions:

Section	Reason	Actions to take
HC Environment	These options are available only when Health Center is active on the target JVM.	Update the Health Center parameters for the target JVM on the TGTPROF view
HC Statistics		For more information, see Editing JVM target definitions .
Usage Data (JMX)	These options are available only when the context has a defined JMX port for the JVM. If the context is a PAS target, this option does not appear on EZJE.	Change the context to a JVM that has a JMX port defined
JVM Environment (JMX)		For more information, see Changing the context to view JMX data for a JVM target

Related topic

[Overview of the EZJE menu](#)

Setting up JVM targets

You can set up JVM targets individually, or you can set up multiple JVMs by using the BMC AMI Ops Monitor *for Java Environments* Configuration Assistant. Use one of the following methods:

- Setting up JVM targets individually
- Setting up JVM targets by using the Configuration Assistant

This section also contains the following topics:

- [Creating additional JVM targets](#)
- [Editing JVM target definitions](#)
- [Deleting JVM target definitions](#)
- [Converting JVM target definitions](#)

Setting up JVM targets by using the Configuration Assistant

The BMC AMI Ops Monitor for Java Environments Configuration Assistant enables you to configure large numbers of remote JVMs to communicate with the BMC AMI OpsMJE PAS. To set up JVM targets with the Configuration Assistant, complete the following tasks:

1. Generating a JVM list
2. Editing the MJEINPUT file
3. Running the list processor JCL
4. Installing the MJETGTxx target into the PAS
5. Adding the configured properties into the JVM property files



For more information, view the Quick Course Configuration Assistant .

When the configuration is finished, the JVM startup process enables a JMX connection request from the PAS to complete successfully.

Before you begin

Before using the Configuration Assistant, complete this worksheet to record the information that you will need to configure your targets.

Information to collect	Your selections
Which JVMs you want to monitor	
Which ports you want to use	
For each monitored JVM, which MJESSLxx member or members you want to use for the JMX security parameters	

Information to collect	Your selections
Data set in which to place the resulting (target) MJETGTxx member	
Paths or data sets in which to store the resulting property statements	
Valid MJEJTB00 member in the BBIPARM library	
Whether to enable Health Center for a JVM	
Which ports to use for Health Center	
For each monitored JVM, which MJESSLxx member or members to use for the Health Center security parameters	

Related topic

[Setting up JVM targets](#)

Generating a JVM list

To start the configuration process, you need to generate a list of all JVMs on a particular LPAR by using the Configuration Assistant List Generator JCL to create a data set input file (MJEINPUT).

To generate a list of all JVMs on a particular LPAR

1. Copy the MJELGEN member from the BBSAMP library into your library, and open the file in an editing session.

2. In MJELGEN, change the following parameters:

Parameter	Description
<i>input_dsn</i>	Data set name for the MJEINPUT file
<i>props_dsn</i>	Data set name for storing JMX properties <div style="border: 1px solid #f0e68c; padding: 10px; margin-top: 10px;"> ⚠ Note <i>props_dsn</i> does not have to be a new data set. </div>
<i>bbproc_dsn</i>	BMC AMI Ops Monitor <i>for Java Environments</i> BBPROC data set name
<i>bbparm_dsn</i>	BMC AMI Ops BBPARM data set name
<i>storclas</i>	Valid SMS storage class

3. Locate the two TSO commands at the end of this /*/* JCL (use **PF8** to scroll to them) and select one for use in the JCL as follows:
- If you need to customize the output data set further, select the first TSO command.
 - If you have no special considerations for your configuration, select the second TSO command.
4. In the selected TSO command, change the following parameters if required.

⚠ Note

The JCL omits parameters that are using their default values. If you want to specify a value other than the default, add the parameter to the JCL.

Parameter	Default value	Description
JTB()=xx	00	Suffix for the MJEJTB member in BBIPARM In most instances, this suffix is 00 unless you have a customized JTB suffix.
HC()=[Y N]	Y	Whether to enable the Health Center on the JVMs that you want to monitor

Parameter	Default value	Description
HCA()= <i>path</i>	--	Fully qualified zfs filename that contains the credentials for Health Center MBean authentication
HCR()= <i>path</i>	--	Fully qualified zfs filename that contains the credentials for Health Center MBean authorization
DFL()=[Y N]	Y	<p>Whether to write a default profile</p> <p>BMC AMI OpsMJE uses the default profile to automatically create targets for Health Center agents without defined targets.</p>
SEC()=[xx NO]	NO	<p>Suffix of the SSL member that you want the new target to use for JMX security</p> <p>Valid values are:</p> <ul style="list-style-type: none"> • NO (the default) adds SSL member MJESSLNO to the target. MJESSLNO contains no SSL parameters • xx, representing a two-character suffix of an existing SSL member
TGT()=xx	00	Suffix for the MJETGT member that is created by the list processor job
PRO()=[JRMP IIOP]	JRMP	RMI protocol for the MJEJVM to communicate with remote user JVMs
PRE()=xxx	MJE	Prefix for property members that are created for added JVMs
HST()=[D Y N]	D	<p>Whether to collect history data for JVMs</p> <p>Valid values are:</p> <ul style="list-style-type: none"> • D (the default), uses the value that is specified for the MVHISTORY parameter in MJEINIxx • Y, collects history data • N, does not collect data

Parameter	Default value	Description
ZPT()= <i>path</i>	/tmp	Directory for the list processor to write JMX property files for JVMs that use the USS file system for reading properties
HCS()=[xx NO]	NO	<p>Suffix of the SSL member that you want to use for building Health Center security properties for a JVM</p> <p>Valid values are:</p> <ul style="list-style-type: none"> • NO (the default) adds SSL member MJESSLNO to the target. MJESSLNO contains no SSL parameters • xx, representing a two-character suffix of an existing SSL member
HCG()=[Y N]	Y	Whether to gather garbage collection data from the Health Center
HCC()=[Y N]	Y	Whether to gather class data from the Health Center
HCH()= <i>nn</i>	15	<p>Interval (in minutes) to gather class histogram data from the Health Center</p> <p>Valid values are 5 through 60. If you specify a zero value, no data is gathered.</p>
HCO()=[O N]	O	<p>Whether to gather out-of-line memory allocation data for the Health Center</p> <p>Valid values are:</p> <ul style="list-style-type: none"> • O (the default), collects all memory allocations within the JVM. • N, no memory allocations are collected.
JPZ()=[Y N]	Y	<p>Whether JMX port 0 is set for JVMs that you want to monitor.</p> <p>You specified the JMX port for each JVM in Configuring JMX and IBM Health Center.</p>

Parameter	Default value	Description
PRT()= <i>portNumber</i> , <i>portNumber...</i> <i>startingPortNumber - endingPortNumber</i>	No default	<p>Range of available ports that the JMX JVM communications can use</p> <p>You can specify ports from 1024 through 65535. Use a comma to separate individual ports, and use a dash to specify ranges.</p>

- On the **COMMAND** line, type **submit** and press **Enter**.

The job creates the MJEINPUT file, using the name that you specified for the *input_dsn* parameter.

Where to go from here

To continue with the configuration, [edit the MJEINPUT file](#).

Related topic

[Setting up JVM targets by using the Configuration Assistant](#)

Editing the MJEINPUT file

After creating the MJEINPUT file, use this procedure to edit the job= statements in the MJEINPUT JCL so that running the job will create:

- One or more MJETGTxx members for the MVJE PAS
- Valid property statements that enable monitoring of remote JVMs

Note

The MJEINPUT file contains an INSTRUCT DD with the same instructions as this procedure, explaining how to edit the JCL before running the job.

The following guidelines apply:

- The MJEINPUT file contains all of the JVMs currently running on an LPAR. Additionally, each JVM has a corresponding job= statement that the list processor uses to create the targets and properties.
- Each job that you want to monitor must have a port assigned to it. Because BMC AMI Ops Monitor for Java Environments cannot know which ports are acceptable in a specific installation, you must enter these ports manually by using a portrange= or a port= statement. For details, see the following procedure or the commented portrange statement in MJEINPUT.
- Ports are assigned sequentially to each job based on the ranges that you specify. Alternatively, you can specify port= on a specific job to override anything specified on portrange=.

Observe the following rules when editing MJEINPUT:

- Lines are processed sequentially, therefore, any parameter not specified on a job= statement defaults to the previous generic setting.
- Use the job= specification to override any generic setting. For example, if port= is set on a job= line, the portrange is ignored and the port number on the job= statement is used.
- A generic setting is in effect for all subsequent job= statements until the JCL encounters another generic setting. For example, if type=cics is encountered, all job= statements that do not specify type= are set to type=cics until another type=xxx generic is found.
- If you specify more than one target suffix (tgtsuff=), the JCL writes multiple MJETGTxx members. Therefore, each instance of tgtsuff= overrides the previous specification.

Example

This example shows a correctly edited portion of the MJEINPUT file:

```
.....
pre=MJE
path=/var/mje/example
tgtsuff=00
secsuff=N0
protocol=JRMP
history=Y
prpsdsn=MVJE.EXAMPLE.PROPS
portrange=2500-2503,3470
    job=BCVDSC71,description='CICS JVM'           ',type=CICS
    job=BCVDN710,description='CICS JVM'          ',type=CICS
    tgtsuff=01
    job=BCVDWUIR,description='CICS JVM'          ',type=CICS
    job=BJW10MNS,description='Batch JZOS 8.0 64 bit',type=JZOS80,port=23675,history=N
    job=BCVDWUID,description='CICS JVM'          ',type=CICS
    job=BCVDCMAD,description='CICS JVM'          ',type=CICS
.....
```

In the example:

- Target member MJETGT00 is written using BCVDSC71 and BCVDN710, and MJETGT01 is written using BCVDWUIR, BJW10MNS, BCVDWUID, and BCVDCMAD.
- Ports are assigned sequentially, for example, BCVDSC71 is assigned port 2500, BCVDN710 is assigned port 2501, and BCVDWUIR assigned port 2502.
- Job BJW10MNS specifies values for port and history that override the generic defaults.

Before you begin

In the MJEINPUT file, locate and open SYSPRNT to check for any errors.

To edit the MJEINPUT file

1. Locate the *input_dsn* (MJEINPUT data set) and open an edit session.
2. Remove the # (comment symbol) from the beginning of the portrange= line.
Uncommenting this line makes MJEINPUT a valid input file for running the list processor.
3. (optional) If the default settings at the beginning of MJEINPUT are not acceptable, update them as needed.
4. Delete or add job= statements as needed:

- Delete any job= statements for jobs that you do not want to monitor with JMX.
 - Add statements for any jobs that you want to monitor and that are not currently in the list. For example, you might want to add statements for JVMs that were not running when you ran the list generator.
5. *(optional)* Update the descriptions for each JVM to be monitored.
Do not lengthen the descriptions. Use only the space between the single quotes.
6. *(optional)* If you need to override a generic parameter, update the job= statements as needed.

 **Tip**

To apply a parameter change to a single job statement, include the parameter override value on the same line as that statement.

To apply the change to a job statement and each subsequent job statement, put the parameter override value on a separate line preceding the first statement to which it applies.

 **Note**

The JCL omits parameters that are using their default values. If you want to specify a value other than the default, add the parameter to the JCL.

Parameter	Default value	Description
pre=xxx	MJE	<p>Three-character prefix for a new PDS member that will contain JMX properties for use in the client JVM</p> <p>This parameter must be on a separate line and cannot be combined with a job= statement.</p>
path=/xxx	/tmp	<p>Directory for the list processor to write JMX property files for JVMs that use the USS file system for reading properties</p> <p>This parameter must be on a separate line and cannot be combined with a job= statement.</p>
tgtstuff=xx	00	<p>Two-character suffix for MJETGTxx members</p> <p>This parameter must be on a separate line and cannot be combined with a job= statement.</p>
portrange= portNumber, portNumber... startingPortNum ber - endingPortNum ber	No default	<p>Range of available ports that the JMX JVM communications can use</p> <p>Use a comma to separate individual ports, and use a dash to specify ranges.</p> <p>This parameter must be on a separate line and cannot be combined with the job= parameter.</p>

Parameter	Default value	Description
secsuff=[xx NO]	NO	<p>Suffix of the SSL member that you want the new target to use for JMX security</p> <p>Valid values are:</p> <ul style="list-style-type: none"> • NO (the default), which adds SSL member MJESSLNO to the target. MJESSLNO contains no SSL parameters • xx, representing a two-character user-specified suffix of an existing SSL member. Alternatively, if you want to create a new SSL member, specify a suffix for the new SSL member <p>You can specify this parameter on a separate line or as part of a job= parameter.</p>
protocol= [JRMP IIOP]	JRMP	<p>RMI protocol for the MJEJVM to communicate with remote user JVMs</p> <p>You can specify this parameter on a separate line or as part of a job= parameter.</p> <p>Valid values are:</p> <ul style="list-style-type: none"> • IIOP • JRMP
history=[D Y N]	D	<p>Whether to collect history data for a JVM</p> <p>Valid values are:</p> <ul style="list-style-type: none"> • D (the default), uses the value that is specified for the MVHISTORY parameter in MJEINIxx • Y, collects history data • N, does not collect data <p>You can specify this parameter on a separate line or as part of a job= parameter.</p>
port= <i>portNumber</i>	No default	<p>Unique port for a particular job</p> <p>You can use this parameter only as part of a job= parameter. Specify a single available port for JMX JVM communications.</p>
description= <i>jobDescription</i>	No default	<p>JVM description</p> <p>Note: This parameter is required for every job= statement.</p>

Parameter	Default value	Description
prpsdsn= <i>propsDatasetName</i>	No default	<p>Data set that stores JMX property members</p> <p>You specified a property data set before generating the JVM list (Generating a JVM list). For any job statements that should use a different property data set, use this parameter to specify the alternative JMX property data set.</p>
hcsecsf=[xx NO]	NO	<p>Suffix of the SSL member that you want to use for building Health Center security properties for a JVM</p> <p>Valid values are:</p> <ul style="list-style-type: none"> • NO (the default), which adds SSL member MJESSLNO to the target. MJESSLNO contains no SSL parameters. • xx, representing a two-character user-specified suffix of an existing SSL member <p>You can specify this parameter on a separate line or as part of a job= parameter.</p>
hc=[Y N]	Y	<p>Whether to enable the Health Center on the JVM</p> <p>You can specify this parameter on a separate line or as part of a job= parameter.</p>
hcgarbage=[Y N]	Y	<p>Whether the JVM should gather garbage collection data for the Health Center</p> <p>You can specify this parameter on a separate line or as part of a job= parameter.</p>
hcclasses=[Y N]	Y	<p>Whether the JVM should gather class data for the Health Center</p> <p>You can specify this parameter on a separate line or as part of a job= parameter.</p>
hchistint=xx	15	<p>Interval (in minutes) to gather class histogram data for the Health Center</p> <p>Valid values are 5 through 60. If you specify a zero value, no data is gathered.</p> <p>You can specify this parameter on a separate line or as part of a job= parameter.</p>
hcobjaloc=[O N]	O	<p>Whether to gather out-of-line memory allocation data for the Health Center</p> <p>Valid values are:</p> <ul style="list-style-type: none"> • O (the default), collects all memory allocations within the JVM

Parameter	Default value	Description
		<ul style="list-style-type: none"> • N, no memory allocations are collected
jmxport0=[Y N]	Y	Whether the PAS should attempt to dynamically determine the JMX port You can specify this parameter on a separate line or as part of a job=parameter.
hcauthfl= <i>path</i>	--	Fully qualified zfs filename that contains the credentials for Health Center MBean authentication You can specify this parameter on a separate line or as part of a job=parameter.
hcrlizefl= <i>path</i>	--	Fully qualified zfs filename that contains the credentials for Health Center Mbean authorization You can specify this parameter on a separate line or as part a job=parameter.

7. Save the edited MJEINPUT file.

Where to go from here

Edit and run the list processor JCL (MJELPRC), which reads the input and builds instructions, MJETGTxx members, and JVM properties files.

Related topic

[Setting up JVM targets by using the Configuration Assistant](#)

Running the list processor JCL

After editing the MJEINPUT file, you must edit and run the list processor JCL file, MJELPRC. MJELPRC creates target definitions and JVM properties files.

To run the list processor JCL

1. Copy the MJELPRC member from the BBSAMP library into your library, and open the file in an editing session.
This file reads the MJEINPUT file.
2. In the job, change the following parameters:

Parameter	Description
<i>input_dsn</i>	Data set name for the MJEINPUT file
<i>bbproc_dsn</i>	BMC AMI Ops Monitor <i>for Java Environments</i> BBPROC data set name
<i>bbparm_dsn</i>	BMC AMI Ops BBPARM data set This data set contains the JMX target definitions. Note If a target definition already exists, you need to change tgtstuff= with a unique qualifier.

3. On the **COMMAND** line, type **submit** and press **Enter**.

The job creates the following items:

- MJETGTxx member (or members), containing the JSON required to monitor JMX targets
- JMX properties files, which enable remote JVMs to connect to the MJEJVM. One property file is created for each target JVM.

Where to go from here

Install the MJETGTxx member as a target in the PAS. For more information, see [Installing the MJETGTxx target into the PAS](#).

Related topic

[Setting up JVM targets by using the Configuration Assistant](#)

Installing the MJETGTxx target into the PAS

After running the list processor JCL file MJELPRC, you must install the MJETGTxx target into the PAS.

Before you begin

Ensure that the BMC AMI Ops Monitor *for Java Environments* PAS is running, and that there are no active JVM targets in the PAS.

To install a MJETGTxx target into the PAS

1. From any BMC AMI OpsMJE view, type **TGTINST** on the **COMMAND** line and press **Enter**.
 2. At **Target Def Suffix** in the **Install a new MJETGT Definition** panel, enter the suffix of the MJETGT member that you want to activate.

```
+----- Install a new MJETGT Definition -----+
| COMMAND ===>                               SCROLL ===> CSR |
| Member Information
|
| Target Def Suffix      BBIPARM Tgt Suffix
|
| Install to install an existing MJETGTxx
| Cancel to exit
| HELP to display help
```

3. On the **COMMAND** line, type **Install** and press **Enter**.

The MJETGTxx target is installed into the PAS. On EZJE, you can hyperlink on **MJEJVM targets** to see the new target definition listed on the TGTPROF view.

! Note

If the list processor created multiple MJETGTxx members, complete this procedure for each MJETGTxx member.

Where to go from here

Add the configured JMX properties to the JVM property files. For more information, see [Adding the configured properties into the JVM property files](#).

Related topic

Setting up JVM targets by using the Configuration Assistant

Adding the configured properties into the JVM property files

To complete the configuration process, you must add the configured JMX properties to the JVM property files, which enables BMC AMI Ops Monitor *for Java Environments* to connect to the JVM. You can configure the property files by using the following methods:

- Using the MJEQCOPY edit macro, as described in this topic
- Manually, as described in [Configuring JMX and IBM Health Center](#).

Before you begin

Copy the MJEQCOPY member from the BBPROC data set into your library.

To add the properties into the JVM property files

1. Locate and open the properties file for the JVM to which you want to add the configured properties.

For more information about finding properties files for JVMs, see the Knowledge Article [000102079](#). You can access the Knowledge Base directly at <http://www.bmc.com/available/search-kb.html> or from the BMC Support Central website (<http://www.bmc.com/support>). In addition, you can refer to the documentation from your JVM application.

2. On the **COMMAND** line, type **MJEQCOPY preport**.

Replace *prePort* with the prefix specified in MJEINPUT for this JVM, followed by the port number that the list processor assigned to the JVM (for example, MJE9290).

You can find the prefix and port number in the following members:

- *props_dsn* file for properties stored in a PDS
- */path/pre/* for properties stored in an HFS

You can also find the port number assigned to each JVM in the MJETGTxx member.

3. Press **Enter**.

The configured JMX properties are added to the JVM property file.

 **Note**

If the configured properties exist in the PDS and HFS files, a prompt asks you to confirm which file to copy.

4. Repeat [Step 2](#) and [Step 3](#) for each JVM that you want to configure.

Related topic

[Setting up JVM targets by using the Configuration Assistant](#)

Setting up JVM targets individually

Use the following procedure if you want to set up JVM targets individually.

⚠ Note

You can run the product without setting up JVM targets. In that case, the product will collect CPU, SMF, and Health Center data, but no JMX data.

This topic explains how to set up JVM targets initially, and how to add, edit, and delete targets subsequently.

1. On EZJE, hyperlink on **Setup MJEJVM targets** under **Setup & Configuration**.

⚠ Note

If you have 2.1 targets already installed on your system, EZJE displays the **Convert Target Defs** option instead of **Setup MJEJVM targets**. For more information about converting targets, see [Converting JVM target definitions](#).

The JVM Add Targets wizard is displayed.

```

JOB Information

Job Name      MJEDZERV          Jobname for JVMs

JMX Information

Description    ZconnectEE-0192 JVM auto c  JVM Description
JMX Port       0                 JMX Listener Port
Security Suffix NO               N Create MJESSL Member?
JMX Protocol   JRMP             REST, IIOP or JRMP
Debug Level    00               Debug Level Control
JVM History    D                Capture JVM History

Health Center Information (ACTIVE AUTO)

Health Center Port SCAN     HC Listener Port
HC Security Suffix NO      Only valid with Port
                           nnnnn
                           Collect
Garbage Collection Y (Y|N)
Classes         Y (Y|N)
Class Histogram Y (Y|N) * Interval 15 Minutes *
Object Allocation 0 (Y|N|0) * between 0           and 0       bytes *
Event Only Mode Y

z/OS Connect EE Information

HTTP Port      0     Used if MJESSL suffix is NO
HTTPS Port     0     requires MJESSL value
Security Suffix NO   MJESSL suffix for this connection

End to add this target
Cancel to exit without adding
HELP to display help

```

2. Complete the fields as described in the following table:

Field	Default value	Description
Job Name= <i>jobName</i>	No default	Job name on which you want to set up a target
JMX Information		
Description= <i>description</i>	No default	Description of the target
JMX Port= <i>n</i>	0	<p>JMX listening port for BMC AMI Ops Monitor <i>for Java Environments</i></p> <p>This port number should match the port that you set up for the JVM in the Configuration JMX setup. For more information, see Configuring JMX and IBM Health Center.</p> <div style="border: 1px solid #fca; padding: 5px; margin-top: 10px;"> ⚠ Note If you specify 0 (the default), no JMX data is returned. </div>
Security Suffix=[NO xx]	NO	<p>Suffix of the SSL member that you want the new target to use</p> <p>Valid values are:</p> <ul style="list-style-type: none"> • NO (the default), which adds SSL member MJESSLNO to the target. MJESSLNO contains no SSL parameters. • xx, representing a two-character user-specified suffix of an existing SSL member. Alternatively, if you want to create a new SSL member, specify a suffix for the new SSL member. <div style="border: 1px solid #fca; padding: 5px; margin-top: 10px;"> ⚠ Note If you specify a suffix for a new SSL member, you must also specify Create MJESSL Member?=Y . </div>
Create MJESSL Member?=[Y N]	N	Whether to create a new SSL security profile
JMX Protocol=[JRMP IIOP REST]	JRMP	<p>Connection protocol as defined in the target JVM for JMX connectivity</p> <p>Valid values are:</p> <ul style="list-style-type: none"> • IIOP

Field	Default value	Description
		<ul style="list-style-type: none"> • JRMP • REST <div style="border: 1px solid #f0e68c; padding: 10px; margin-top: 10px;"> <p>⚠ Note</p> <p>If you specify JMX Protocol=REST, you must specify the following values:</p> <ul style="list-style-type: none"> • For the JMX Port parameter, specify the HTTPS port for the Representational state transfer (REST) local interface. • For the Security Suffix parameter, specify the suffix of an SSL member containing security information for the REST server. • For more information, view the Quick Course Set MVJE and Liberty servers to gather JMX data using the REST interface. </div>
Debug Level= <i>nn</i>	00	<p>Level of debugging for each JMX connection to the target JVM</p> <p>Valid values are 00 and 01.</p> <div style="border: 1px solid #f0e68c; padding: 10px; margin-top: 10px;"> <p>⚠ Note</p> <p>You should change this value only at BMC Support's request.</p> </div>
History=[D Y N]	D	<p>Whether to collect history data</p> <p>Valid values are:</p> <ul style="list-style-type: none"> • D (the default), uses the value that is specified in MJEINIxx • Y, collects history data • N, does not collect data
Health Center Information		
Health Center Port=[Scan <i>nnnnn</i>]	Scan	<p>Health Center port to which the product should connect</p> <p>Valid values are:</p>

Field	Default value	Description
		<ul style="list-style-type: none"> Scan, the product scans the target address space for a listening Health Center port <i>nnnnn</i>, representing a port number <div style="border: 1px solid #f0e68c; padding: 10px; margin-top: 10px;"> <p>⚠ Note</p> <p>If you specified JMX Protocol=REST, and your port falls in the scan range between HCPORTSTART and HCPORTEND, specify Scan.</p> </div>
Security Suffix=[NO xx]	NO	<p>Suffix of the SSL member that you want to use for building Health Center security properties for the JVM</p> <p>Valid values are:</p> <ul style="list-style-type: none"> NO (the default), which adds SSL member MJESSLNO to the target. MJESSLNO contains no SSL parameters. xx, representing a two-character user-specified suffix of an existing SSL member. Alternatively, if you want to create a new SSL member, specify a suffix for the new SSL member.
Garbage Collection=[Y N]	Y	Whether to collect information about garbage collectors
Classes=[Y N]	Y	Whether to collect information about the Java classes being loaded and their usages
Class Histograms=[Y N] *Interval <i>nn</i> minutes*	Y, 15	<p>Whether to collect class histograms</p> <p>Valid values are:</p> <ul style="list-style-type: none"> Y (the default), collects class histograms at <i>nn</i> minute intervals N, no class histograms are collected
Object Allocation=[O Y N] *between <i>nnnn</i> and <i>nnnn</i> bytes*	O	<p>Whether to collect out-of-line memory allocations</p> <p>Valid values are:</p> <ul style="list-style-type: none"> O (the default), collects all memory allocations within the JVM Y, collects all memory allocations between <i>nnnn</i> and <i>nnnn</i> bytes

Field	Default value	Description
		<ul style="list-style-type: none"> • N, no memory allocations are collected
Event Only Mode=Y	Y	<p>Whether Health Center should operate in only event mode</p> <div style="border: 1px solid #f0e68c; padding: 10px; margin-top: 10px;"> <p>⚠ Note</p> <p>You cannot modify this field.</p> </div>
z/OS Connect EE Information		
HTTP Port=nnnnn	0	<p>Port number for a http listener port</p> <p>The product uses this port if you specify Security Suffix=NO for the z/OS Connect EE target.</p>
HTTPS Port=nnnnn	0	<p>Port number for a https listener port</p> <p>The product uses this port if you specify an SSL member for the z/OS Connect EE target.</p>
Security Suffix=[NO xx]	NO	<p>Suffix of the SSL member that you want to use for building z/OS Connect EE security properties for the JVM</p> <p>Valid values are:</p> <ul style="list-style-type: none"> • NO (the default), which adds SSL member MJESSLNO to the target. MJESSLNO contains no SSL parameters. • xx, representing a two-character user-specified suffix of an existing SSL member. Alternatively, if you want to create a new SSL member, specify a suffix for the new SSL member.

3. (optional) To add additional JVM targets, complete the following steps for each additional target:

a. On the **COMMAND** line, enter **N** (Next).

A message indicates that the target entry was built.

⚠ Warning

The target is not yet saved or installed. Do not exit the JVM Add Targets wizard before saving or installing the targets, which occurs in [Step 6](#).

b. Complete each dialog field for the new target.

4. When finished adding targets, on the **COMMAND** line enter **E** (End).
5. If you specified **Y** in the **Create MJESSL Member?** field, complete the **Create Security Member dialog** and then enter **SAVE** on the **COMMAND** line.

Field	Default value	Description
Description= <i>description</i>	No default	Description of the SSL member
Member Suffix=xx	xx	Suffix for the new SSL member Define a two-character number or alphanumeric suffix.
SSL Enabled=[YES NO]	N	Whether the target JVM requires SSL security for the connection
Password Auth=[YES NO]	N	Whether the target JVM requires authenticating the user ID and password for JMX connectivity
Client Auth=[YES NO]	N	Whether the target JVM requires SSL client authentication
SSL Debug=[YES NO]	N	Whether to create debug information on connection communications
Keystore= <i>keystorePath</i>	No default	<p>USS path to a keystore for SSL handshaking</p> <p>When the target JVM requires SSL security (SSL Enabled=YES), the implementation of SSL security is either Java SSL (JSSE) or IBM RACF SSL.</p> <p>Valid values are as follows:</p> <ul style="list-style-type: none"> • Java SSL (JSSE) – the file path of the keystore • RACF SSL – the name of the RACF keyring <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> Note If you are using MJESSL xx to gather resource information for z/OS Connect EE, the keystore should include the public key </div>

Field	Default value	Description
		for the z/OS Connect EE server in addition to the PAS's public and private keys.
Key Password= <i>keystorePassword</i>	No default	Password for the specified keystore
Key Type= <i>keystoreType</i>	No default	Type of keystore Valid values are: <ul style="list-style-type: none">• Java SSL (JSSE) – JKS• RACF SSL – JCERACFKS
Truststore= <i>truststorePath</i>	No default	USS path to a truststore for SSL handshaking When the target JVM requires SSL security (SSL Enabled=YES), the implementation of SSL security is either Java SSL or RACF SSL. Valid values are as follows: <ul style="list-style-type: none">• Java SSL (JSSE) – the file path of the truststore• RACF SSL – the name of the RACF keyring
Trust Password= <i>truststorePassword</i>	No default	Password for the specified truststore
Trust Type= <i>truststoreType</i>	No default	Type of truststore Valid values are: <ul style="list-style-type: none">• Java SSL (JSSE) – JKS• RACF SSL – JCERACFKS

6. In the **Save Current Targets dialog**, take one of the following actions:

Action	Steps
To install the new targets into the running PAS and save the target definitions	<p>1. In the Member Suffix field, define a two-character number or alphanumeric suffix.</p> <p>2. In the Overwrite field, define one of the following values:</p> <ul style="list-style-type: none"> • Y to overwrite existing members with the specified suffix • N to retain the existing member <div style="border: 1px solid #f0e68c; padding: 5px; margin-top: 10px;"> <p>Note If no member exists with the defined suffix, specify N.</p> </div> <p>3. On the COMMAND line, enter Persist.</p>
To install the new targets into the running PAS without saving the target definitions	<p>On the COMMAND line, enter Install.</p> <div style="border: 1px solid #f0e68c; padding: 5px; margin-top: 10px;"> <p>Note When the BMC AMI Ops Monitor for Java Environments PAS shuts down, these targets will be lost.</p> </div>
To save the target definitions	<p>1. In the Member Suffix field, define a two-character number or alphanumeric suffix.</p> <p>2. In the Overwrite field, define one of the following values:</p> <ul style="list-style-type: none"> • Y to overwrite existing members with the specified suffix • N to retain the existing member <div style="border: 1px solid #f0e68c; padding: 5px; margin-top: 10px;"> <p>Note If no member exists with the defined suffix, specify N.</p> </div> <p>3. On the COMMAND line, enter Save.</p>

When EZJE returns, the **Setup MJEJVM targets** option has changed to **MJEJVM targets** (unless you saved without installing to the PAS, in which case the option remains unchanged).

Related topic

[Setting up JVM targets](#)

[Target parameters \(MJETGT00\)](#)

Creating additional JVM targets

When you have set up and installed initial JVM targets, you can use the following procedure to create additional JVM targets. You can create target definitions from scratch, or by adding an active JVM.

1. Take one of the following actions:

- *To create a JVM target from scratch, enter **ADDJ** on the command line of any BMC AMI Ops Monitor for Java Environments view.*
- *To add a JVM target for an active JVM on the system, complete the following steps:*

- i. On EZJE, hyperlink on **Current Active JVMs**.

The JVMDISC view displays all active JVMs.

>W1 =JVMDISC===== (ALL====*)==== 31AUG2020==08:38:37====MVJE====D==11												
CMD	Job	JVM	ASID	Process	Current	Act	Tgt	JMX	HC	W	Lst	Req
---	Name	Type	ID	TCB							Cnt	Date
	BBGZSRVM	Liberty	003B	17040007	5C5E88	Yes	Yes	Yes	Yes	U	5	31AUG202
	IZUSVR1	Liberty	00AA	17039399	5E3528	Yes	No	No	No	U	2	31AUG202
	MJECIQ56	CICS OSGI	003D	262816	5A6E88	Yes	Yes	Yes	Yes	U	5	31AUG202
	MJECIQ56	CICS WLP	003D	17040050	59D2B0	Yes	Yes	Yes	Yes	U	4	31AUG202
	MVJETCAT	JZOS	0180	262836	5EE1A0	Yes	No	No	No	U	5	31AUG202
	MVJE3SM	MJEJVM	015A	17040996	5BDE88	Yes	No	No	No	U	4	31AUG202
	OBJALLCS	java	00E7	50594495	5BDE88	Yes	Yes	Yes	No	U	3	31AUG202
	TOMCATQI	JZOS	00ED	84148255	5EE1A0	Yes	No	No	No	U	2	31AUG202
	TOMCATQX	JZOS	00D6	67371111	5EE1A0	Yes	No	No	No	U	1	31AUG202
	WS855BS	WAScntl	0098	33817275	5C4E88	Yes	No	No	No	U	8	31AUG202
	WS855BSS	WASsrvt	017C	17040042	5C6E88	Yes	No	No	No	U	0	31AUG202

- ii. Enter **ADD** in the **CMD** column next to the job name containing the JVM that you want to add as a JVM target.

2. In the JVM Add Targets wizard, complete the fields for the new target, as described in [Setting up JVM targets individually](#).
3. On the command line, enter **E** (End).
4. In the **Save Current Targets** dialog, take one of the following actions:

- *To install the new target into the running PAS and save the target, complete the following steps:*
 - i. In the **Member Suffix** field, define a two-character number or alphanumeric suffix.
 - ii. In the **Overwrite** field, define one of the following values:
 - **Y** to overwrite existing members with the specified suffix
 - **N** to retain the existing member

Note

If no member exists with the defined suffix, specify **N**.

iii. On the command line, enter **Persist**.

- To install the new target into the running PAS without saving the target, enter **Install** on the command line.

⚠ Note

When the BMC AMI OpsMJE PAS shuts down, these targets will be lost.

The new target appears on the TGTPROF view.

Related topic

[Setting up JVM targets](#)

Editing JVM target definitions

Use the following procedure to edit JVM target definitions.

1. Use one of the following methods to access the TGTPROF view:
 - On EZJE, hyperlink on **MJEJVM targets**.
 - From any view, type **TGTPROF** on the **COMMAND** line.
2. On the TGTPROF view, type **EDIT** on the **COMMAND** line.
3. Enter **CHA** in the **CMD** column next to the target definition that you want to edit.
4. In the JVM Profile Change dialog, edit the target parameters.
5. On the **COMMAND** line, type one of the following values:
 - **Persist** to install the updated target into the running PAS and save the target definition
 - **Install** to install the updated target into the running PAS without saving the target

⚠ Note

If you specified **Install**, when you restart the PAS, the specified values are not saved. Also, the target reverts to its original definition.

Related topic

[Setting up JVM targets](#)

Deleting JVM target definitions

Use the following procedure to delete a JVM target definition.

1. On the TGTPROF view, type **EDIT** on the **COMMAND** line.
2. Type **DEL** in the **CMD** column next to the JVM target that you want to delete.
3. In the confirmation panel, select one of the following options and then press **Enter**:
 - **Delete** to remove the target definition from the system that is running
 - **Persist** to remove the target definition from both MJETGTxx and the system that is running

Related topic

[Setting up JVM targets](#)

Converting JVM target definitions

Use the following procedure if you want to convert a version 2.1 target to a version 3.2 target.

1. On EZJE, hyperlink on **Convert Target Defs** under **Setup & Configuration**.

⚠ Note

If no targets are installed on your system, EZJE displays the **Setup MJEJVM targets** option instead of **Convert Target Defs**. For more information about creating new JVM targets, see [Setting up JVM targets](#).

The JVM Target Conversion Wizard is displayed.

JVM Target Conversion Wizard		
JOB Information		
Job Name	MJECIQ53	Jobname for JVMs
JMX Information		
JMX Protocol	JRMP	Suggested value
History	Y	
Health Center Information		
Add Default profile	Y (Y N)	Autotgt
Health Center Port Scan		HC Listner Port
Security Suffix	00	only valid with Port nnnn
Garbage Collection	Y (Y N)	Collect
Classes	Y (Y N)	
Class Histogram	Y (Y N)	* Interval 15 minutes *
Object Allocation	O (O N)	
Event Only Mode	Y	
z/OS Connect EE Information		
HTTP Port	0	Used if MJESSL suffix is NO
HTTPS Port	0	requires MJESSL value

```

Security Suffix      NO      MJESSL suffix for this connection
End to convert to MVJE 3.2 format
Cancel to exit
HELP to display help

```

2. Complete the fields as described in the following table:

Field	Default value	Description
JOB Information		
Job Name	<i>jobName</i>	Job name on which the target is set up
JMX Information		
JMX Protocol= [JRMP IIOP REST]	JRMP	<p>Connection protocol as defined in the target JVM for JMX connectivity</p> <p>Valid values are:</p> <ul style="list-style-type: none"> • IIOP • JRMP • REST <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;"> <p>Note</p> <p>If you specify JMX Protocol=REST, you must specify the following values:</p> <ul style="list-style-type: none"> • For the JMX Port parameter, specify the HTTPS port for the Representational state transfer (REST) local interface. • For the Security Suffix parameter, specify the suffix of an SSL member containing security information for the REST server. • For more information, view the Quick Course Set MVJE and Liberty servers to gather JMX data using the REST interface </div>
History=[D Y N]	D	<p>Whether to collect history data</p> <p>Note: The default value (D), uses the value specified for the MVHISTORY parameter in the MJEINI xx member.</p>

Health Center Information		
Add Default profile =[Y N]	Y	Whether to create a default profile in the converted target definition. A default profile enables automatically creating Health Center and IBM WebSphere Application Server targets.
Health Center Port=[Scan nnnn]	Scan	<p>Health Center port to which BMC AMI Ops Monitor <i>for Java Environments</i> should connect</p> <p>Valid values are:</p> <ul style="list-style-type: none"> • Scan, the product scans the target address space for a listening Health Center port • <i>nnnn</i>, representing a user-specified four-digit port number <div style="border: 1px solid #f0e68c; padding: 10px; margin-top: 10px;"> <p>Note</p> <p>If you specified JMX Protocol=REST, and your port falls in the scan range between HCPORTSTART and HCPORTEND, specify Scan.</p> </div>
Security Suffix=[NO nn]	NO	<p>Suffix of the SSL member that you want the Health Center target to use</p> <p>Valid values are:</p> <ul style="list-style-type: none"> • NO (the default), which adds SSL member MJESSLNO to the target. MJESSLNO contains no SSL parameters. • <i>xx</i>, representing a user-specified two-character suffix of an existing SSL member. Alternatively, if you want to create a new SSL member, specify a suffix for the new SSL member.
Garbage Collection=[Y N]	Y	Whether to collect garbage information about Java heap and pause times
Classes=[Y N]	Y	Whether to collect information about the Java classes being loaded and their usages
Class Histogram=[Y N] * Interval <i>nn</i> Minutes *	Y, 15	<p>Whether to collect class histograms</p> <p>Valid values are:</p> <ul style="list-style-type: none"> • Y (the default), collects class histograms at <i>nn</i>-minute intervals • N, does not collect class histograms

Object Allocation =[O N]	O	Whether to collect out-of-line memory allocations Valid values are: <ul style="list-style-type: none">• O (the default), collects all memory allocations within the JVM• N, does not collect memory allocations
Event Only Mode =Y	Y	Whether the Health Center should operate in only event mode <div style="border: 1px solid #f0e68c; padding: 5px; margin-top: 10px;">⚠ Note<p>You cannot modify this field.</p></div>
z/OS Connect EE Information		
HTTP Port=nnnnn	0	Port number for a http listener port The product uses this port if you specify Security Suffix=NO for the z/OS Connect EE target.
HTTPS Port=nnnnn	0	Port number for a https listener port The product uses this port if you specify an SSL member for the z/OS Connect EE target.
Security Suffix=[NO xx]	NO	Suffix of the SSL member that you want to use for building z/OS Connect EE security properties for the JVM Valid values are: <ul style="list-style-type: none">• NO (the default), which adds SSL member MJESSLNO to the target. MJESSLNO contains no SSL parameters.• xx, representing a two-character user-specified suffix of an existing SSL member. Alternatively, if you want to create a new SSL member, specify a suffix for the new SSL member.

3. To install and save the target definition, enter **E** (End) on the **COMMAND** line.
When EZJE returns, the **Convert Target Defs** option has changed to **MJEJVM targets**.

Related topic

[Setting up JVM targets](#)

Using default JVM profiles to collect JMX data

(BMC.AMIOPS.SPE2110) 

If BMC AMI Ops Monitor for Java Environments discovers an active JVM that doesn't match a specific profile, when Health Center connects, BMC AMI OpsMJE requests JMX data by using one of the following default profiles:

- Default JVM profile (non-Liberty JVMs)
- _DEFREST (default REST) profile (Liberty JVMs)

These default profiles are shipped in the MJETGT00 member. If you are using a customized MJETGT00 member you can create a _DEFREST profile as described in [Setting up a _DEFREST profile](#).

Important

- For BMC AMI OpsMJE to use default profiles, JMXSEARCH=YES must be defined in MJEINIO0. JMXSEARCH=YES is the default value.
- For BMC AMI OpsMJE to use the _DEFREST profile for Liberty JVMs, you must create a MJESSLMV member. You can use the ADDSEC primary command to create SSL members.
 - In the MJESSLMV member, specify the KeyRing for the MVJE PAS.
 - Make sure that RACF is set up and that a CERTAUTH (CA) exists for the MVJE PAS. For more information, see [Create a certificate for the MVJE PAS](#).

Setting up a _DEFREST profile

1. Type **ADDJ** on the command line.
2. In the JVM Add Targets Dialog, specify the following values:

JVM Add Targets Dialog		
COMMAND ==>		SCROLL ==> CSR
JOB Information		
Job Name	_DEFREST	Jobname for JVMs
JMX Information		
Description	Default REST profile	JVM Description
JMX Port	0	JMX Listener Port
Security Suffix	MV	N Create MJESSL Member?
JMX Protocol	REST	REST, JRMP or IIOP
Debug Level	00	Debug Level Control
JVM History	D	Capture JVM History
Health Center Information (ACTIVE AUTO)		
Health Center Port SCAN	HC Listener Port	
HC Security Suffix NO	Only valid with Port nnnnn	
Collect		
Garbage Collection	Y (Y N)	
Classes	Y (Y N)	

```

| Class Histogram      Y (Y|N)    * Interval 15 Minutes *
| Object Allocation   0 (Y|N|0)  * between 0           and 0       bytes *
| Event Only Mode     Y

|
| z/OS Connect EE
| Information

| HTTP Port          0      Used if MJESSL suffix is NO
| HTTPS Port         0      requires MJESSL value
| Security Suffix    NO     MJESSL suffix for this connection

|
| End to add this target
| Cancel to exit without adding
| HELP to display help
|
+-----+

```

3. On the command line, enter **E** (End).

4. In the **Save Current Targets** dialog, take the following actions:

a. In the **Member Suffix** field, define a two-character number or alphanumeric suffix.

In the **Overwrite** field, define one of the following values:

- **Y** to overwrite existing members with the specified suffix
- **N** to retain the existing member

 **Note**

If no member exists with the defined suffix, specify **N**.

c. On the command line, enter **Persist**.

Related topics

[Target parameters \(MJETGT00\)](#)

[Creating SSL members](#)

[Product initialization parameters](#)

[Customizing after installation](#)

Using

After customizing the product (as explained in [Customizing after installation](#)), you can use the following topics to begin using the product:

Action	Reference
Access BMC AMI Ops Monitor <i>for Java Environments</i> views	Overview of the EZJE menu
If you are using timed discovery, discover JVMs on demand, and change the timed interval	Discovering new JVMs on demand (timed discovery only)
If you are using timed discovery, change the timed interval	Changing the interval for timed discovery
View or edit PAS parameters on the PARMEDT and PASPARM views	Viewing or editing PAS parameters with the PARMEDT view Viewing or editing PAS parameters and SSL members on the PASPARM view
Create SSL members	Creating SSL members
Switch the context in which the product is running	Changing the context to view JMX data for a JVM target
Understand how the product uses logsets	Working with logsets
Shutdown MJEJVM	Shutting down the product JVM (MJEJVM)
Restart MJEJVM	Restarting the product JVM (MJEJVM)
Stop the BMC AMI OpsMJE PAS	Stopping the BMC AMI Ops Monitor for Java Environments PAS
Offload debugging information	Offloading debugging information

Action	Reference
Identify threads that are in blocked state	Identifying blocked threads

BMC AMI OpsMJE views

You can access BMC AMI Ops Monitor *for Java Environments* views from the following easy menus:

Easy menu	Description
EZJE	Access views displaying data for the active JVMs on your system, or current usage data for a selected JMX target.
EZZCONN	Access views displaying z/OS Connect EE information
EZADMIN	Access administration views

Related topics

[Overview of the EZJE menu](#)

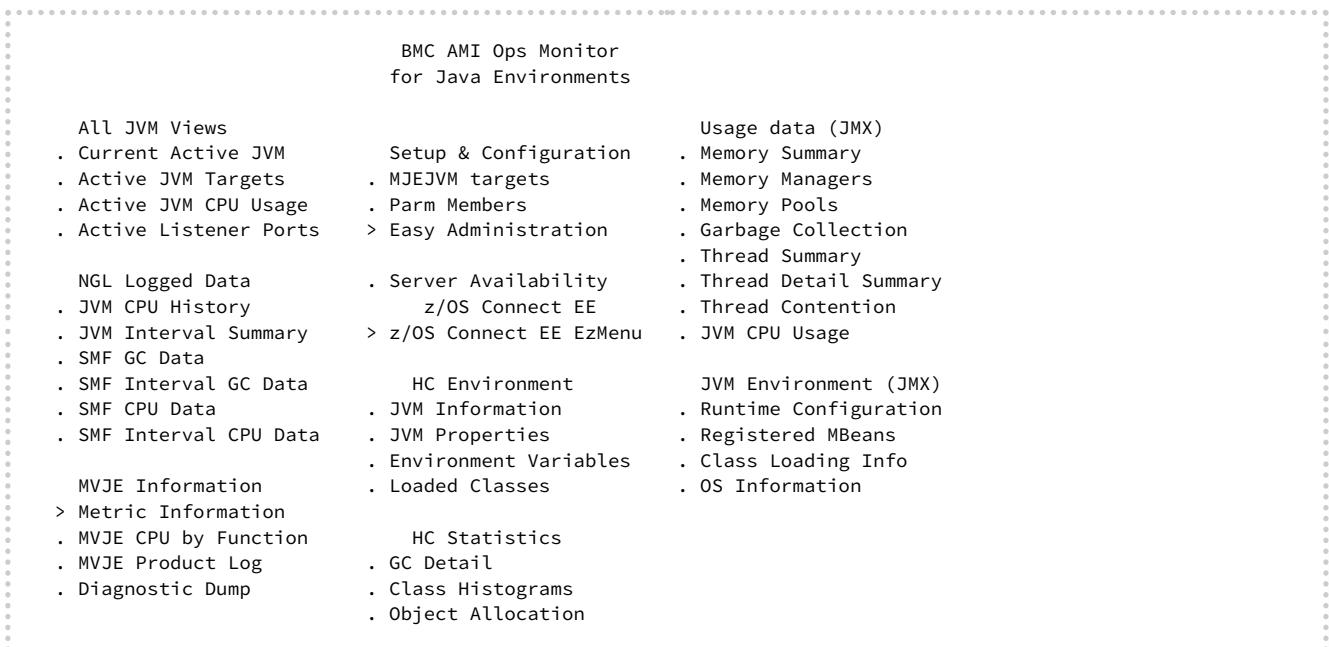
[Overview of the EZADMIN menu](#)

[Overview of the z/OS Connect EE easy menu \(ZZZCONN\)](#)

[Using](#)

Overview of the EZJE menu

Starting the BMC AMI Ops Monitor *for Java Environments* product displays the EZJE menu. You can use the EZJE menu hyperlinks to access data pertaining to the active JVMs on your system, or current usage data for a selected JMX target. You can also use EZJE to confirm that product setup is complete. EZJE is a dynamic menu that displays options based on your setup and context:



The following table briefly describes each section in the menu. For more information about the views associated with a particular section, click the section's name in column 1:

Hyperlinks in this section	Provide access to
All JVM Views	<p>Views containing information about the active JVMs in the system</p> <p>The views provide current data activity <i>from any context</i>, whether a JMX target or a PAS target.</p>
NGL Logged Data	<p>Views containing information about collected NGL data</p> <p>The views provide current data activity <i>from any context</i>, whether a JMX target or a PAS target.</p>
MVJE information views	<p>Views containing metrics about BMC AMI OpsMJE views, monitor usage data, and debugging logs</p>
Setup & Configuration	<p>Views and wizards for setting up the product</p>

Hyperlinks in this section	Provide access to
	<p>The first hyperlink in the list indicates whether JVM targets are set up. One of the following options is displayed:</p> <ul style="list-style-type: none"> • MJEJVM targets, indicating that targets are set up. Clicking on this link displays the TGTPROF view, which lists all defined JVM targets. • Convert JVM targets, indicating that no targets are set up, but version 2.1 targets are available for conversion. Clicking on this link displays the JVM Target Conversion Wizard. For more information, see Converting JVM target definitions. • Setup JVM targets, indicating that no targets are set up. Clicking on this link displays the JVM Add Targets Wizard. For more information, see Setting up JVM targets. <p>The Easy Administration option gives you access to the PARMEDT views, where you can confirm that PAS initialization and environmental parameters are properly set up. For more information, see Viewing or editing PAS parameters with the PARMEDT view.</p> <p>Alternatively, you can edit PAS parameter members from the PASPARM view by clicking on Parm Members. For more information, see Viewing or editing PAS parameters and SSL members on the PASPARM view.</p> <p>The Server Availability option displays the status of the JVMs on the watch list.</p>
z/OS Connect EE³	z/OS Connect EE easy menu (EZCONN)
Health Center environment views¹	Views containing data obtained from the IBM Health Center Agent
Health Center statistics views¹	Statistics views containing data obtained from the IBM Health Center Agent
Usage data (JMX)²	Views containing current usage data for a selected JMX target
JVM Environment (JMX) views²	Views containing information related to the setup of the JVMs in the system

1 This option is available only when the Health Center is active on the target JVM. You can update the parameters for a JVM on the TGTPROF view. For more information, see [Editing JVM target definitions](#).

2 This option is available only when the context has a defined JMX port for the JVM. If the context is a PAS target, this option does not appear on EZJE. For more information, see [Changing the context to view JMX data for a JVM target](#).

3 This option is available only when one or more z/OS Connect EE JVMs are running in your environment.

Related topics

[Confirming product setup with the EZJE menu](#)

[BMC AMI OpsMJE views](#)

All JVM Views

The JVM views display information about the active JVMs in the system, including:

- Discovered JVMs
- Discovered JMX targets
- CPU usage
- Active listener ports

The views provide current data activity from any context, whether a JMX target or a PAS target.

View name	Description	Access from
Current Active JVM (JVMDISC)	<p>Lists all of the JVMs that are currently running in your environment</p> <p>On JVMDISC you can perform the following actions:</p> <ul style="list-style-type: none"> • Change the context in which BMC AMI Ops Monitor <i>for Java Environments</i> is running by hyperlinking on a JVM target. For more information, see Changing the context to view JMX data for a JVM target. • Define new JVM targets by using the ADD line command. For more information, see Creating additional JVM targets. • Schedule a CPU time collection into the specified JVM by using the CPU line command. 	Current Active JVM option on EZJE

View name	Description	Access from
	<p>Note</p> <p>Collection is done asynchronously. Therefore, the view might not reflect the new time immediately.</p> <ul style="list-style-type: none"> • Add a JVM to the Watch List by using the WAT line command. For more information, see Adding JVMs to the Watch List. • (<i>PTF BPF0457 applied</i>) Request a dump for a JVM. For more information, see Requesting a dump for a JVM (PTF BPF0457 applied). 	
Discovered JVMs Detail view (JVMDISCD)	Displays all the discovered information for selected target	Active column for a JVM on JVMDISC
Active JVM targets (JVMDTGT)	<p>Lists all discovered JMX targets</p> <p>On JVMDTGT you can perform the following actions:</p> <ul style="list-style-type: none"> • Define new JVM targets by using the ADD line command. For more information, see Creating additional JVM targets. • Schedule a CPU time collection into the specified JVM by using the CPU line command. <p>Note</p> <p>Collection is done asynchronously. Therefore, the view might not reflect the new time immediately.</p>	Active JVM targets option on EZJE
Active JVM CPU Usage (JVMDCPU)	<p>Displays CPU information for all discovered JVMs, and schedules a CPU collection for each JVM</p> <p>On JVMDCPU you can perform the following actions:</p> <ul style="list-style-type: none"> • Define new JVM targets by using the ADD line command. For more information, see Creating additional JVM targets. • Schedule a CPU time collection into the specified JVM by using the CPU line command. 	Active JVM CPU Usage option on EZJE

View name	Description	Access from
	<p>Note</p> <p>Collection is done asynchronously. Therefore, the view might not reflect the new time immediately.</p>	
Active listener ports summary (JVMLSPTZ)	<p>Lists all active listener ports by jobname, PID, and ASID</p> <p>You can update listener port information for all discovered JVM ASIDs by clicking on Click here to UPDATE the table, or by typing UPDATE on the COMMAND line.</p> <p>Alternatively, you can enter the UPD line command in the CMD column to update information for a specific JVM ASID.</p>	Active Listener Ports option on EZJE
JVM listener ports (JVMLSPT)	<p>Displays active listener port information for all PIDs, or information about a specific PID</p> <p>You can update listener port information for all discovered JVM ASIDs by clicking on Click here to UPDATE the table, or by typing UPDATE on the COMMAND line. Alternatively, you can enter the UPD line command in the CMD column to update information for a specific JVM ASID.</p>	<p>To display information for all PIDs , type JVMLSPT on the COMMAND line from any view.</p> <p>To display information about a specific PID, hyperlink to JVMLSPT from JVMDISC or JVMLSPTZ.</p>

Related topic

[Overview of the EZJE menu](#)

NGL Logged Data

The NGL logged data views that contain information about collected NGL data, including:

- CPU data for JVMs
- Interval data for JVMs
- SMF garbage-collection data for JVMs

- CPU data for threads
- Interval data for threads

The views provide current data activity from any context, whether a JMX target or a PAS target.

 **Tip**

If you are using the MainView Explorer (MVE) interface, you can access *view containers* showing graphs for interval views. For more information, see [View containers](#).

View name	Description	Access from
All JVM CPU (JVMCPU)	<p>Displays CPU information from NGL for all of the JVMs that have run on your system</p> <p>Retrieval filters enable you to filter the information by start/end date, start/end time, JVM type, and PID.</p>	JVM CPU History option on EZJE
All JVM Detail (JVMCPUD)	Displays detailed CPU information for a selected JVM	Job Name column on JVMCPU
All JVM CPU Summary (JVMCPUIZ)	<p>Displays interval data from NGL for all JVMs that have run on your system</p> <p>NGL collects interval data when a JVM stops.</p> <p>You can pre-filter the data that is retrieved from NGL by using the following criteria:</p> <ul style="list-style-type: none"> • Job name • Jvm type • Process ID • Time and date range <p>Retrieval filters enable you to filter the information by start/end date, start/end time, JVM type, and PID.</p>	JVM Interval Summary option on EZJE
All JVM interval data (JVMCPUI)	<p>Displays interval data from NGL for a selected JVM</p> <p>Retrieval filters enable you to filter the information by start/end date, start/end time, JVM type, and PID.</p>	Job name or Process ID column on JVMCPUIZ

View name	Description	Access from
SMF GC Summary (SMFGCZ)	<p>Summarizes SMF garbage-collection data by job name, JVM ID, and record time</p> <p>BMC AMI Ops Monitor <i>for Java Environments</i> collects data at SMF intervals and at shutdown. For JVMs that do not collect SMF garbage-collection data, you can see garbage collection from JMX data.</p> <p>Retrieval filters enable you to filter the information by start/end date, start/end time, JVM type, and PID.</p> <div data-bbox="393 691 1176 878" style="border: 1px solid #f0e68c; padding: 10px;"> <p>Note</p> <p>Before the product can collect SMF data, you must specify product initialization parameters for the SMF collection. For more information, see Product initialization parameters.</p> </div>	SMF GC Data option on EZJE
SMF GC information (SMFGC)	Displays one record for each garbage collector that is identified in its own section of the SMF 121.1 or 29.2 records	On SMFGCZ, hyperlink on the Job Name or GC Cnt column.
SMF GC Detail Information view (SMFGCD)	Displays detailed garbage collection information for either a SMF 121.1 or 29.2 record	On SMFGC and SMFGCI, hyperlink on the Job Name column.
SMF GC Interval Summary (SMFGCIZ)	<p>Displays one interval record for each garbage-collection interval per JVM</p> <p>Retrieval filters enable you to filter the information by start/end date, start/end time, JVM type, and PID.</p>	SMF Interval GC Data on EZJE
SMF GC Interval Information (SMFGCI)	<p>Displays one interval record for each garbage-collection interval for the selected JVM</p> <p>Retrieval filters enable you to filter the information by start/end date, start/end time, JVM type, and PID.</p>	On SMFGCIZ, hyperlink on the Job Name column.

View name	Description	Access from
SMF GC Detail information (SMFGCD)	Displays detailed garbage collection data for either a SMF 121.1 or 29.2 record	On SMFGCD , hyperlink on the Job Name column.
SMF Thread CPU Summary (SMFCPUZ)	<p>Summarizes thread CPU data by job name, process ID, and thread category</p> <p>Retrieval filters enable you to filter the information by start/end date, start/end time, JVM type, and PID.</p>	SMF CPU Data option on EZJE
SMF Thread CPU information (SMFCPU)	<p>Displays thread CPU data identified in the Thread section of the SMF 121.1 record</p> <p>Retrieval filters enable you to filter the information by start/end date, start/end time, JVM type, and PID.</p>	On SMFCPUZ hyperlink on the Job name or Process ID column
SMF Thread CPU Details (SMFCPUD)	Displays detailed thread CPU data identified in the Thread section of the SMF 121.1 record	On SMFCPU and SMFCPUI hyperlink on the Job name column
SMF Interval CPU Data (SMFCPUIZ)	<p>Displays one interval record for each thread interval per JVM</p> <p>Retrieval filters enable you to filter the information by start/end date, start/end time, JVM type, and PID.</p>	SMF Interval CPU Data option on EZJE
SMF Thread CPU interval information (SMFCPUI)	<p>Displays one interval record for each thread identified in thread CPU section of the SMF 121.1</p> <p>Retrieval filters enable you to filter the information by start/end date, start/end time, JVM type, and PID.</p>	On SMFCPUIZ hyperlink on Record Time

Related topic

Overview of the EZJE menu

MVJE information views

The MVJE information views enable you to:

- Monitor usage data for running the product
- Investigate debugging logs
- Perform a data dump for diagnostics

View name	Description	Access from
MVJE CPU by Function (MJECPU)	<p>Displays data about the CPU used by BMC AMI Ops Monitor for Java Environments functions, including a count that indicates the number of calls</p> <p>You can also see how many times the function has run by looking at the Execution Count field. For long-running tasks, the value for Execution Count is updated when a new request executes.</p> <div data-bbox="568 923 1092 1080" style="border: 1px solid #f0e68c; padding: 10px;"> <p> Note</p> <p>The execution count for MJEJVM updates only when the count starts.</p> </div>	MVJE CPU by Function option on EZJE
MVJE Product Log (DBUGINFO)	<p>Displays a log of debugging data and messages for diagnostic purposes</p> <p>From this view you can execute commands to offload debugging information. For more information, see Offloading debugging information.</p>	MVJE Product Log option on EZJE
Diagnostic Dump	Use this hyperlink to offload debugging data.	Diagnostic Dump option on EZJE

Related topic

[Overview of the EZJE menu](#)

Setup and configuration views

The setup and configuration views enable you to:

- Set up individual JVM targets
- Convert JVM target definitions
- Define parameter members
- View administration settings
- View a list of parameter members on the PASPARM view

You can access the Setup and configuration views under **Setup & Configuration** on the EZJE menu.

View name	Description	Access from
Target Profile Definitions (TGTPROF)	<p>Displays all target definitions</p> <p>On this view you can edit and delete target definitions. For more information, see Editing JVM target definitions and Deleting JVM target definitions.</p>	MJEJVM targets option on EZJE
Target Profile Detail (TGTPROFD)	Displays detailed information about a selected target	Job Name column on TGTPROF
MVJE Settings (MJESETD)	<p>Displays the current global settings</p> <div data-bbox="420 1327 1087 1516" style="border: 1px solid #f0e68c; padding: 10px;"> <p>Note</p> <p>For some fields in the MJESETD view, you can change settings while the system is running by typing over the displayed settings.</p> </div>	MVJE Settings option on EZJE
PAS Parm Members List (PASPARM)	<p>Displays PAS parameter members</p> <p>On this view you can view and edit parameter members. For more information, see Viewing or editing PAS parameters and SSL members on the PASPARM view.</p>	Parm Members option on EZJE

View name	Description	Access from
Watch List Summary (WATCHLTZ)	<p>Displays information about the JVMs on the watch list</p> <p>You can set alerts on this view to notify you if a JVM becomes inactive.</p> <p>On WATCHLTZ you can perform the following actions:</p> <ul style="list-style-type: none"> • Add a JVM to the watch list by using the following commands: <ul style="list-style-type: none"> • ADDI primary command open a blank MPD • ADD line command opens an MPD for the selected job name • Change the watch list parameters for a job name by using the CHA line command • Delete a JVM from the watch list by using the DEL line command <p>For more information, see Adding JVMs to the Watch List.</p>	Server Availability option on EZJE

Related topics

- Overview of the EZJE menu
- Setting up JVM targets
- Converting JVM target definitions
- Viewing or editing PAS parameters and SSL members on the PASPARM view

Health Center environment views

Health Center environment views containing data obtained from the IBM Health Center Agent, including:

- JVM properties information for Health Center ports
- System properties information
- Environmental properties information
- Class loading information for the Health Center ports defined to a target

View name	Description	Access from
JVM Information Summary (HCJVMZ)	Summarizes JVM property information, by Health Center port	JVM Information option on EZJE
JVM Information (HCJVM)	Displays JVM property information a selected process ID	On HCJVMZ , hyperlink on Process ID .
System Information Summary (HCPROPZ)	Summarizes system properties information by Health Center port	JVM Properties option on EZJE
System Information (HCPROP)	Displays system properties for a selected process ID	On HCPROPZ , hyperlink on Process ID .
Environmental Information Summary (HCENVZ)	Summarizes environmental properties by port	Environment Variables option on EZJE
Environmental Information (HCENV)	Displays environmental properties information for the selected process ID	On HCENVZ , hyperlink on Process ID .
Loaded Classes Summary (HCCLASSZ)	Summarizes loaded classes, as reported by the Health Center agent	Loaded Classes option on EZJE
Loaded Classes (HCCLASS)	Displays class loading information for the selected process ID	On HCCLASSZ , hyperlink on Process ID .

Related topic

[Overview of the EZJE menu](#)

Health Center statistics views

Health Center Statistics views containing data obtained from the IBM Health Center Agent, including:

- Detailed garbage collection data

- Class histogram summary data
- Object allocation summary data

View name	Description	Access from
Garbage Collection Detail Summary (HCGCDETZ)	Summarizes garbage collection information that the Health Center agent gathers by job, process ID, and garbage collection reason	GC Detail option on EZJE
Garbage Collection Detail (HCGCDET)	Displays detailed garbage collection information for a selected job	On HCGCDETZ , hyperlink on the Job Name column.
Class Histogram Summary (HCCHZ)	<p>Summarizes class histogram data by job name and process ID</p> <p>The Class Histogram data is obtained from the Health Center jar file in intervals, as specified in the target profile for the monitored JVM.</p>	Class Histograms option on EZJE
Class Histogram Detail (HCCHD)	Displays detailed class histogram data for a selected process ID	On HCCHZ , hyperlink on the Process ID column.
Object Allocation Summary (HCALLOCZ)	<p>Summarizes object allocation data that the Health Center agent gathers</p> <p>The target profile for the monitored JVM specifies the size of the captured object allocation.</p>	Object Allocation option on EZJE
Object Allocation (HCALLOC)	Displays object allocation data for the selected job name or process ID	On HCALLOCZ , hyperlink on the Job Name or Process ID column.

Related topic

Overview of the EZJE menu

Usage data (JMX) views

The usage data views contain current data for a selected JMX target.

Note

The hyperlinks are available only when the context has a defined JMX port for the JVM. For more information, see [Changing the context to view JMX data for a JVM target](#).

You can access these views under **Usage data (JMX)** on the EZJE menu.

View name	Description	Access from
JMX Memory Summary (MEMSUM)	<p>Summarizes JVM memory usage data for each JMX port that is defined to a target.</p> <p>JVM memory consists of heap and non-heap memory:</p> <ul style="list-style-type: none"> • Heap memory is the runtime data area from which memory for all class instances and arrays is allocated. Heap memory is created at JVM startup. The garbage collector reclaims heap memory for objects. • Non-heap memory is for the method area and is created at JVM startup. Non-heap memory stores per-class structures such as a runtime constant pool, field and method data, and code and constructors. In addition to the method area, non-heap memory also includes memory for internal processing or optimization (that is, JIT, native code). <p>You can hyperlink on the Interval Time and Date column to display data for a selected interval.</p> <p>You can also hyperlink on the Process ID column to see addition information in BMC AMI Ops Monitor for Unix Systems Services views, and on the JMX Port column to see addition information in BMC AMI Ops Monitor for IP views.</p>	Memory Summary option on EZJE

View name	Description	Access from
JMX Memory Summary Detail (MEMSUMD)	<p>Displays detailed memory summary information for a selected JVM, including, changes in used memory and CPU time spent doing garbage collection</p> <p>The view shows values for the interval and the time between requests for data.</p>	On MEMSUM , hyperlink on the Job Name column.
Memory Manager Summary (MEMMGRZ)	Summarizes memory pools by memory manager and process ID (PID)	Memory Managers option on EZJE
Memory Manager (MEMMGR)	Lists all memory pools managed by memory managers for the JMX targets for the selected service point	On MEMMGRZ , hyperlink on the Memory Manager Name column.
Memory Manager Detail (MEMMGRD)	Displays detailed memory information for a selected memory pool	On MEMMGR , hyperlink on the Pool Name column.
Memory Pools (MEMPOOL)	<p>Displays information about all memory pools associated with the selected memory manager</p> <p>You can hyperlink on the Interval Time and Date column to display data for a selected interval.</p>	Memory Pools option on EZJE
Memory Pool Detail (MEMPOOLD)	Displays detailed information about a selected memory pool	On MEMPOOL , hyperlink on the Job Name column.
JMX Garbage Collection Summary (GCSUMZ)	Summarizes garbage-collection information by Job name and PID	Garbage Collection option on EZJE
JMX Garbage Collection (GCSUM)	Displays garbage-collection information	On GCSUMZ , hyperlink on the Job Name column.
JMX Garbage Collection interval (GCSUMI)	Displays garbage-collection interval data	Access GCSUMI using one of the following methods:

View name	Description	Access from
		<ul style="list-style-type: none"> To view garbage-collection interval data for each record in the count, on GCSUMZ hyperlink on the Record Count column. To view garbage-collection interval data for a process ID, on GCSUMZ hyperlink on the Process ID column.
Thread Summary (THRDSUM)	<p>Summarizes detailed thread information for a JVM or JMX port, including:</p> <ul style="list-style-type: none"> Current number of live threads, live user threads, and live daemon threads Peak number of threads Total number of threads since JVM startup State of a thread (such as runnable, blocked, or waiting) Amount of time that a thread has waited for notification Amount of time that a thread has been blocked Thread lock owner names Line of code where a thread was blocked <p>In addition, THRDSUM shows whether thread contention is enabled, and whether the JVM supports monitoring of object monitor usage, ownable synchronizer, and thread contention.</p>	Thread Summary option on EZJE
JVM Thread Summary Detail (THRDSUMD)	Displays detailed thread information for a selected JVM	On THRDSUM , hyperlink on the Job Name column.
Thread Detail Summary (THRDDTLZ)	<p>Summarizes of information by thread ID within the JVM</p> <p>The THRDDTLZ view has one entry for each active thread in the JVM. A stack trace is available for any highlighted thread name.</p>	On THRDSUM , hyperlink on the Live Curr column.

View name	Description	Access from
	<p>If a thread is not blocked, BlockObject, LockOwnerName, and LockedAt are null. If thread contention is not supported or disabled, BlockedTime and WaitTime are zero.</p> <p>For CICS targets, you can hyperlink on the Tran ID, Program Name, and Task Number columns to see additional information about a thread in the BMC AMI Ops Monitor for <i>CICS</i> views.</p> <p>(BMC.AMIOPS.SPE2110) You can execute the following actions:</p> <ul style="list-style-type: none"> Temporarily update the stack trace path with the PATH primary command. Request a stack trace for a thread with the TRC line command. <p>For more information, see Requesting a stack trace for a thread.</p>	
Thread Detail (THRDDTL)	<p>Displays detailed information about active threads</p> <p>For CICS targets, you can hyperlink on the Tran ID, Program Name, and Task Number columns to see additional information about a thread in the BMC AMI Ops Monitor for <i>CICS</i> views.</p> <p>For Db2 threads (com.ibm.db2), you can hyperlink on the Class Name column to see Db2 thread information related to a JVM in BMC AMI Ops Monitor for <i>Db2</i> views.</p>	<p>Access THRDDTL using one of the following methods:</p> <ul style="list-style-type: none"> To view information about a specific thread, on THRDDTLZ hyperlink on the Thread State column. To view information about all of the threads that are running in your environment, type THRDDTL on the COMMAND line.
Thread Detail Trace Entry (THRDDTLD)	Displays detailed information about a selected thread	On THRDDTL , hyperlink on the Thread Name column.
Thread Contention (THRDCON)	<p>Displays the status of threads</p> <p>On the THRDCON view you can identify threads that are in a BLOCKED state. You can hyperlink to the THRDDTLZ view to see details about the</p>	Thread Contention option on EZJE

View name	Description	Access from
	<p>thread and the thread lock owner. For more information, see Identifying blocked threads.</p> <p>(BMC.AMIOPS.SPE2110) You can also execute the following actions:</p> <ul style="list-style-type: none"> • Temporarily update the stack trace path with the PATH primary command. • Request a stack trace for a thread with the TRC line command. <p>For more information, see Requesting a stack trace for a thread.</p>	
JVM CPU Usage (JMXCPU)	<p>Displays CPU usage information for each JVM defined in the target profile</p> <p>The CPU usage consists of the total CPU time in milliseconds for system threads, application threads, and resource-monitor threads.</p> <p>The system CPU time is an aggregate of GC, JIT, and other daemon threads. The application CPU time can be optionally divided into a maximum of five user-defined categories called Application-User1 through Application-User5.</p> <p>The Resource-Monitor CPU time is for threads that the application has designated as a resource-monitor category. This CPU time does not count towards determining the state of the application.</p>	JVM CPU Usage option on EZJE
JMX CPU Usage Detail (JMXPUD)	Displays detailed CPU usage information for a selected JVM	On JMXPUD , hyperlink on the Job Name column.

Related topic

Overview of the EZJE menu

JVM Environment (JMX) views

The JMX views contain information related to the setup of the JVMs in the system, including:

- JVM configuration information
- Registered MBeans
- Class loading information for JMX ports
- Operating System information

You can access the JMX views under **JVM Environment (JMX)** on the EZJE menu.

View name	Description	Access from
JVM Runtime Configuration Information Summary (JVMCONFZ)	Summarizes JVM configuration information	Runtime Configuration on EZJE
JVM Runtime Configuration Information Detail (JVMCONFD)	Displays detailed JVM configuration information	On JVMCONFZ hyperlink on the Process ID column.
Registered MBean Summary by Class name (MBEANZ)	Summarizes MBean information by class name	Registered MBeans on EZJE
Registered MBeans List (MBEAN)	Lists all MBeans for the JVMs running in the selected target	On MBEANZ , hyperlink on the Process ID column.
Registered MBean Detail (MBEAND)	Displays detailed MBean information for a selected process ID	On MBEANZ , hyperlink on the Class Name column.
JVM Class Loading Summary (CLSSUM)	Summarizes JVM class loading information for each JMX port that is defined for a target This view displays the current number of classes that have been loaded and the total	Class Loading Info on EZJE

View name	Description	Access from
	<p>number of classes that have been unloaded since the JVM started.</p> <p>You can hyperlink on the Interval Time and Date column to display data for a selected interval in the view.</p>	
JVM Class Loading Detail (CLSSUMD)	Displays detailed information about JVM class loading	On CLSSUM , hyperlink on the Job Name column.
JMX Operating System Summary (OSINFO)	Summarizes information about the operating system where the JVM is running	OS Information on EZJE
Operating System Information Detail (OSINFOD)	Displays detailed information about the operating system where the JVM is running	On OSINFO , hyperlink on the Job Name column.

Related topic

[Overview of the EZJE menu](#)

Overview of the EZADMIN menu

Use the **Easy Administration** hyperlink to access the EZADMIN menu. From EZADMIN, you can edit parameter members and complete administration tasks.

The following figure shows the EZADMIN menu:

```

W1 =EZADMIN===== (ALL=====*) 11MAY2020==02:16:20====MVJE====D====1

                               Administration
Parameter Management          +-----+
                               | Place cursor on   | . Resource Definitions
. MJEINI Settings           |   menu item and    | . Resource Def. List
. MJEENV Settings           |   press ENTER      | . Resource Def. Overview
. Target Settings            +-----+
. JVM Security Settings

```



The following table briefly describes each section in the menu.

Hyperlinks in this section	Provide access to
Parameter Management	<p>Views that enable you to:</p> <ul style="list-style-type: none"> Update parameter members for initialization, environmental, and security settings View security resource definitions View and edit setting for defined JVM targets View information about the JVMs on the watch list and set alarms <p>For more information about these views, see Parameter Management views.</p>
General	<p>Views displaying information about the product, and hyperlinks to the EZJE and EZMETRIC views</p> <p>For more information, see Overview of the EZMETRIC menu.</p>
Product Actions	<p>Hyperlinks enabling the following actions:</p> <ul style="list-style-type: none"> Restart MJEJVM Connect to NGL <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;"> <p>Note</p> <p>This option is displayed if the product is unable to connect to NGL, and the number of reconnect attempts have finished.</p> </div>
Security	Security resource definitions on the SERDEF view

Hyperlinks in this section	Provide access to
Tools and Menus	<p>Administration views, including:</p> <ul style="list-style-type: none"> • Message log • EZPLEX • List of all product views

Related topic
Setup & Configuration

Parameter Management views

The Parameter Management views

View name	Description	Access from
PARMEDT	<p>Lists the parameters for a selected member</p> <p>On this view you can view and edit parameters for a member. For more information, see Viewing or editing PAS parameters with the PARMEDT view.</p>	MJEINI Settings and MJEENV Settings options on EZADMIN
Target Profiles (TGTPROF)	<p>Displays all defined JVM targets</p> <p>On TGTPROF you can perform the following actions:</p> <ul style="list-style-type: none"> • Update the parameters for a JVM target by using the CHA line command. For more information, see Editing JVM target definitions. • Delete a JVM target by using the DEL line command. For more information, see Deleting JVM target definitions. • Detach the service point for a JVM target by using the DET line command. • Reattach the service point for a JVM target by using the REA line command. 	Target Settings option on EZADMIN

View name	Description	Access from
	<ul style="list-style-type: none"> Save the currently installed targets definitions by typing SAVE on the COMMAND line. 	
Watch List Summary (WATCHLTZ)	<p>Displays information about the JVMs on the watch list You can set alerts on this view to notify you if a JVM becomes inactive.</p> <p>On WATCHLTZ you can perform the following actions:</p> <ul style="list-style-type: none"> Add a JVM to the watch list by using the following commands: <ul style="list-style-type: none"> ADDI primary command open a blank MPD ADD line command opens an MPD for the selected job name Change the watch list parameters for a job name by using the CHA line command Delete a JVM from the watch list by using the DEL line command <p>For more information, see Adding JVMs to the Watch List.</p>	Watch List Settings option on EZADMIN
Watch List (WATCHLST)	<p>Displays details for a selected JVM on the watch list You can set alerts on this view to notify you if a JVM becomes inactive.</p> <p>On WATCHLTZ you can perform the following actions:</p> <ul style="list-style-type: none"> Add a JVM to the watch list by using the following commands: <ul style="list-style-type: none"> ADDI primary command open a blank MPD ADD line command opens an MPD for the selected job name Change the watch list parameters for a job name by using the CHA line command Delete a JVM from the watch list by using the DEL line command <p>For more information, see Adding JVMs to the Watch List.</p>	Job Name field on the WATCHLTZ view
PAS Parameter Members (PASPARM)	Displays the actively installed parameter members and the name of the data set on which they reside	All PAS Members option on EZADMIN

View name	Description	Access from
	<p>On PASPARM you can perform the following actions:</p> <ul style="list-style-type: none"> • View the parameters for a selected member by using the VIEW (V) line command • Edit the parameters for a selected member by using the EDIT (E) line commandFor more information, see Viewing or editing PAS parameters and SSL members on the PASPARM view • Install a selected member by using the INSTALL (I) line command • Tag a selected member for a subsequent action bu using the TAG (T) line command. • Deploy all tagged members to one or more targets by using the DEPLOY primary command. A series of panels display options to select one or more targets. • Clear the tag line from all tagged members by using the TAGClr and TAGC primary commands. 	

Overview of the EZMETRIC menu

Use the **Metric Information** hyperlink on EZJE to access the EZMETRIC menu. From EZMETRIC, you can access Data Dictionary views that display metrics about BMC AMI Ops Monitor for Java Environments views.

The following figure shows a sample METRICZV view:

W1 =EZMETRIC=METRICZV=MJECIQ54=*****06FEB2018==03:24:33====MVJE====D====61
- Product : MVJE
. Sum by Field Help Title . Dynamic Thresholds Defined
. Sum by Element + Table . All Available Metrics
C View Name Element View Description View Type
- ----- Count -----
CLSSUM 15 Class loading Summary Tabular
CLSSUMD 18 Class loading Detail Detail
DBUGINFO 12 Diagnostic List Tabular
GCSUM 18 Garbage Collection Tabular
GCSUMD 31 Garbage Collection Detail Detail
GCSUMI 19 Garbage Collection interval Tabular
GCSUMZ 14 Garbage Collection Summary Summary
JMXCPU 13 JMX CPU Stats Tabular

For more information about the Data Dictionary, see [Managing the Data Dictionary](#).

⚠ To access the metrics views, ensure that the following started task parameter is defined in the PAS:

//Y\$MVJE DD DUMMY

For more information, see [Started task parameters](#).

Related topic

[BMC AMI OpsMJE views](#)

Overview of the z/OS Connect EE easy menu (EZCONN)

You can use the EZCONN menu hyperlinks to access data pertaining to the active JVMs on your system, or current usage data for a selected z/OS Connect EE target.

Like EZJE, EZCONN is a dynamic menu that displays options based on your setup and context. To access the menu, you must have one or more z/OS Connect EE JVMs running in your environment. Depending on your context, in addition to z/OS Connect views EZCONN displays hyperlinks to Health Center and JMX views. For more information about Health Center and JMX data views, see [Overview of the EZJE menu](#).

You can access EZCONN from the EZJE menu. The following figure shows an example of the EZCONN menu ([\(BMC.AMIOPS.SPE2204\)](#)).

```
>W1 =EZCONN=====BAQSTDB2=====02MAR2022==04:03:15=
z/OS Connect EE

- z/OS Connect EE Stats
  . Active z/OS Connect EE
  . URI Summary
  . API Summary
  . API Summary Interval
  . Service Summary
  . Service Summary Interval
  . Service Providers
  . API Requester Summary
  z/OS Connect Current
  . API Requester
  . API/Services/Admin
  z/OS Connect EE Detail
    . API Summary
    . API Requester Summary
    . Service Summary
    . API Summary by Server
    . API Summary by URI
    . All Services and APIs
    . All API Requesters

      Setup & Configuration
        . MJEJVM targets
        . Parm Members
        > Easy Administration
        . Return...
          HC Environment
            . JVM Information
            . JVM Properties
            . Environment Variables
            . Loaded Classes
              HC Statistics
                . GC Detail
                . Class Histograms
                . Object Allocation
```

The z/OS Connect EE views enable you to monitor response times and other metrics for z/OS Connect EE API requests. You can also use these views to identify the cause of slow response times within z/OS Connect EE.

The z/OS Connect EE views provide the following benefits:

- Identify z/OS Connect EE servers
- Identify z/OS Connect EE APIs and services
- Display data about response times by API, service, and URI
- [\(BMC.AMIOPS.SPE2204\)](#) Display real-time data about API, service and admin requests

The following table briefly describes each section in the menu. For more information about the views associated with a particular section, click the section's name in column 1:

Hyperlinks in this section	Provide access to
z/OS Connect EE Stats	Statistics views displaying data about APIs or services
(BMC.AMIOPS.SPE2204)  z/OS Connect EE current views	Current views displaying real-time data about API, service and admin requests
z/OS Connect EE Detail	Detail views displaying detailed data for individual requests and summarized by API, JVM name, and URI

Related topic
BMC AMI OpsMJE views
Overview of the EZJE menu

[z/OS Connect EE statistics views](#)

The z/OS Connect EE statistics views display data about APIs or services. z/OS Connect EE views enable you to monitor response times and other metrics for z/OS Connect EE API requests. You can also use these views to identify the cause of slow response times within z/OS Connect EE.

z/OS Connect EE statistics views display following data:

- Detailed data for all discovered z/OS Connect EE JVMs on the system
- Summary data about URIs, APIs, services, and service providers
- Interval summary data for APIs and services
- Summary data about starting and stopping APIs and services

You can access the z/OS Connect EE views under **z/OS Connect EE Stats** on the EZZCONN menu.

View name	Description	Access from
Discovered z/OS Connect EE JVMs (JVMDZCON)	<p>Lists all discovered z/OS Connect EE JVMs on the system</p> <p>You can enter the following line commands in the CMD column for any JVM that you want to affect:</p> <ul style="list-style-type: none"> • ADD starts the JVM Add Targets wizard that enables you to define new targets. For more information, see Setting up JVM targets individually. • CPU schedules a CPU time collection into the specified JVM. Because the collection is done asynchronously, the view might not reflect the new time immediately. <p>You can change the context in which the product is running by hyperlinking on the Job Name column. EZZCONN opens in the context of the selected target.</p>	Active z/OS Connect EE option under z/OS Connect EE Stats on EZZCONN
Summary of available URIs (ZCONURIZ)	<p>Summarizes all discovered APIs and services by URI</p> <p>You can enter the line commands in the CMD column to START or STOP a service.</p>	URI Summary option under z/OS Connect EE Stats on EZZCONN
Summary view of all z/OS Connect EE APIs (ZCONAPIZ)	<p>Summarizes all APIs by API name</p> <p>You can enter the line commands in the CMD column to START or STOP an API.</p>	API Summary option under z/OS Connect EE Stats on EZZCONN
z/OS Connect EE API (ZCONAPI)	<p>Lists all discovered APIs</p> <p>You can enter the line commands in the CMD column to START or STOP an API.</p>	Access ZCONAPI using one of the following methods: <ul style="list-style-type: none"> • To view information about a specific API, hyperlink on an API name in the ZCONAPIZ view. • To view information about all APIs, type ZCONAPI on the COMMAND line.

View name	Description	Access from
z/OS Connect EE API detail view (ZCONAPID)	Displays detailed API data	On ZCONAPI , hyperlink on the API path column.
Summary view of all APIs (ZCONAIIZ)	<p>Summarizes interval data for all APIs by target URI</p> <p>You can enter the line commands in the CMD column to START or STOP an API.</p>	API Summary Interval option under z/OS Connect EE Stats on EZZCONN
Interval view of available APIs (ZCONAI)	<p>Displays interval data of all APIs by API path and method</p> <p>You can enter the line commands in the CMD column to START or STOP an API.</p>	API Path field on ZCONAIIZ
Summary of all z/OS Connect EE services (ZCONSRVZ)	<p>Summarizes all services by target URI</p> <p>You can enter the line commands in the CMD column to START or STOP a service.</p>	Service Summary option under z/OS Connect EE Stats on EZZCONN
z/OS Connect EE Services (ZCONSRV)	<p>Displays data for all discovered services</p> <p>You can enter the line commands in the CMD column to START or STOP a service.</p>	<p>Access ZCONSRV from one of the following views:</p> <ul style="list-style-type: none"> • On ZCONSPZ, hyperlink on the Service Provider field. • On ZCONURIZ, hyperlink on the Target URI field.
z/OS Connect EE Service Detail (ZCONSRVD)	Displays detailed data about a selected service	On ZCONSRV , hyperlink on Target URI

View name	Description	Access from
Summary of all services (ZCONSIIZ)	<p>Summarizes interval data for all services by service name</p> <p>You can enter the line commands in the CMD column to START or STOP a service.</p>	Service Summary Interval option under z/OS Connect EE Stats on EZZCONN
Summary by service provider (ZCONSVPZ)	<p>Summarizes all services by service provider</p> <p>You can enter the line commands in the CMD column to START or STOP a service.</p>	Service Providers option under z/OS Connect EE Stats on EZZCONN
z/OS Connect EE Response Code Summary view (ZCONERRZ)	<p>Summarizes z/OS Connect EE response codes, by error code and API.</p> <p>From ZCONERRZ, you can hyperlink to ZCONRSPD to see detailed information.</p>	Type ZCONERRZ on the command line.
API Requester Statistics summary (ZCONARSZ)	<p>Summarizes statistics data for z/OS Connect EE API Requesters</p> <p>From ZCONARSZ, you can hyperlink to ZCONARS and ZCONARSD to see detailed information.</p>	API Requester Summary option under z/OS Connect EE Stats on EZZCONN
API Requester Statistics (ZCONARS)	Displays statistics data for z/OS Connect EE API Requesters	On ZCONARSZ , hyperlink on the ApiRequester Name field when the method count is more than 1.
API Requester Statistics detail (ZCONARSD)	Displays detailed statistics data for z/OS Connect EE API Requesters	<p>On ZCONARS, hyperlink on the ApiRequester Name field.</p> <p>You can also hyperlink directly from ZCONARSZ, when the method count for an API requester is equal to 1.</p>
API Requester Detail Current Summary (ZCONARCZ)	Displays a summary of detailed current data for z/OS Connect EE API Requesters	Type ZCONARCZ on the command line.

View name	Description	Access from
	From ZCONARCZ, you can hyperlink to ZCONARDC to see detailed information.	

Related topic

[Overview of the z/OS Connect EE easy menu \(EZCONN\)](#)

z/OS Connect EE current views

(BMC.AMIOPS.SPE2204) 

The z/OS Connect EE current views display real-time data about APIs or services. z/OS Connect EE views enable you to monitor response times and other metrics for z/OS Connect EE API requests.

z/OS Connect EE current views display following data:

- Real-time z/OS Connect EE data from API requesters
- Real-time data about API, admin and service requests

You can access the z/OS Connect EE views under **z/OS Connect Current** on the EZCONN menu.

View name	Description	Access from
API Requester Detail Current Data (ZCONARDC)	Displays detailed current data for z/OS Connect EE API Requesters	API Requester Current option under z/OS Connect Current on EZCONN . Alternatively, you can hyperlink on the Server Name column on ZCONARCZ.
z/OS Connect EE inbound Request (ZCONADR)	Displays current and recent inbound requests	API/Admin option under z/OS Connect Current on EZCONN .

View name	Description	Access from
z/OS Connect EE API Request Detail (ZCONADAD)	Displays real-time data about a selected inbound API request	On ZCONADR, hyperlink on the Target URI column for an API request.
z/OS Connect EE Admin Request Detail (ZCONADDD)	Displays real-time data about a selected admin request	On ZCONADR, hyperlink on the Target URI column for an admin request.
z/OS Connect EE Service Request Detail (ZCONADSD)	Displays real-time data about a selected inbound service request	On ZCONADR, hyperlink on the Target URI column for a service request.

Related topic

[Overview of the z/OS Connect EE easy menu \(EZCONN\)](#)

z/OS Connect EE detail views

The z/OS Connect EE detail views display data for individual detail entries for selected services (SMF) and API requesters. z/OS Connect EE views enable you to monitor response times and other metrics for z/OS Connect EE API requests. You can also use these views to identify the cause of slow response times within z/OS Connect EE.

z/OS Connect EE detail views display summarized by API, JVM name, and URI statistics.

You can access the z/OS Connect EE views under **z/OS Connect EE Detail** on the EZCONN menu.

View name	Description	Access from
z/OS Connect EE Response Codes Detail (ZCONRSPD)	Displays detailed information about z/OS Connect EE response codes	On ZCONERRZ , hyperlink on the Target URI column.
z/OS Connect EE SMF Summary by API (ZCONRAPZ)	<p>Summarizes z/OS Connect EE requests by API name</p> <p>Retrieval filters enable you to filter the information by start/end date, start/end time and API name, server name, path, and request type.</p>	API Summary option under z/OS Connect EE Detail on EZZCONN
API Requester Detail Summary view (ZCONARDZ)	Summarizes detailed data for z/OS Connect EE API Requesters	API Requester Summary option under z/OS Connect EE Detail on EZZCONN
Service Summary view (ZCONRSVZ)	<p>Lists z/OS Connect EE requests, summarized by service name</p> <p>Retrieval filters enable you to filter the information by start/end date, start/end time and API name, server name, path, and request type.</p>	Service Summary option under z/OS Connect EE Detail on EZZCONN
z/OS Connect EE SMF Summary by JVM view (ZCONRJVZ)	<p>Summarizes z/OS Connect EE requests by JVM name</p> <p>Retrieval filters enable you to filter the information by start/end date, start/end time and API name, server name, path, and request type.</p>	API Summary by Server option under z/OS Connect EE Detail on EZZCONN
z/OS Connect EE SMF Summary by URI view (ZCONRURZ)	<p>Summarizes z/OS Connect EE requests by URI name</p> <p>Retrieval filters enable you to filter the information by start/end date, start/end time and API name, server name, path, and request type.</p>	API Summary by URI option under z/OS Connect EE Detail on EZZCONN

View name	Description	Access from
z/OS Connect EE SMF Requests view (ZCONREQ)	<p>Displays all z/OS Connect EE requests</p> <p>Retrieval filters enable you to filter the information by start/end date, start/end time and API name, server name, path, and request type.</p>	All Services and APIs option under z/OS Connect EE Detail on EZZCONN
z/OS Connect EE Request detail view (ZCONREQD)	Displays detailed information for a specific z/OS Connect EE request	On ZCONREQ , hyperlink on the Target URI column.
API Requester Detail Tabular (ZCONARD)	Displays detailed information for z/OS Connect EE API Requesters in a tabular format	All API Requesters option under z/OS Connect EE Detail on EZZCONN
API Requester Detail (ZCONARDD)	Displays detailed information about a selected API Requester	On ZCONARD or ZCONARDC , hyperlink on the ApiRequester Name column

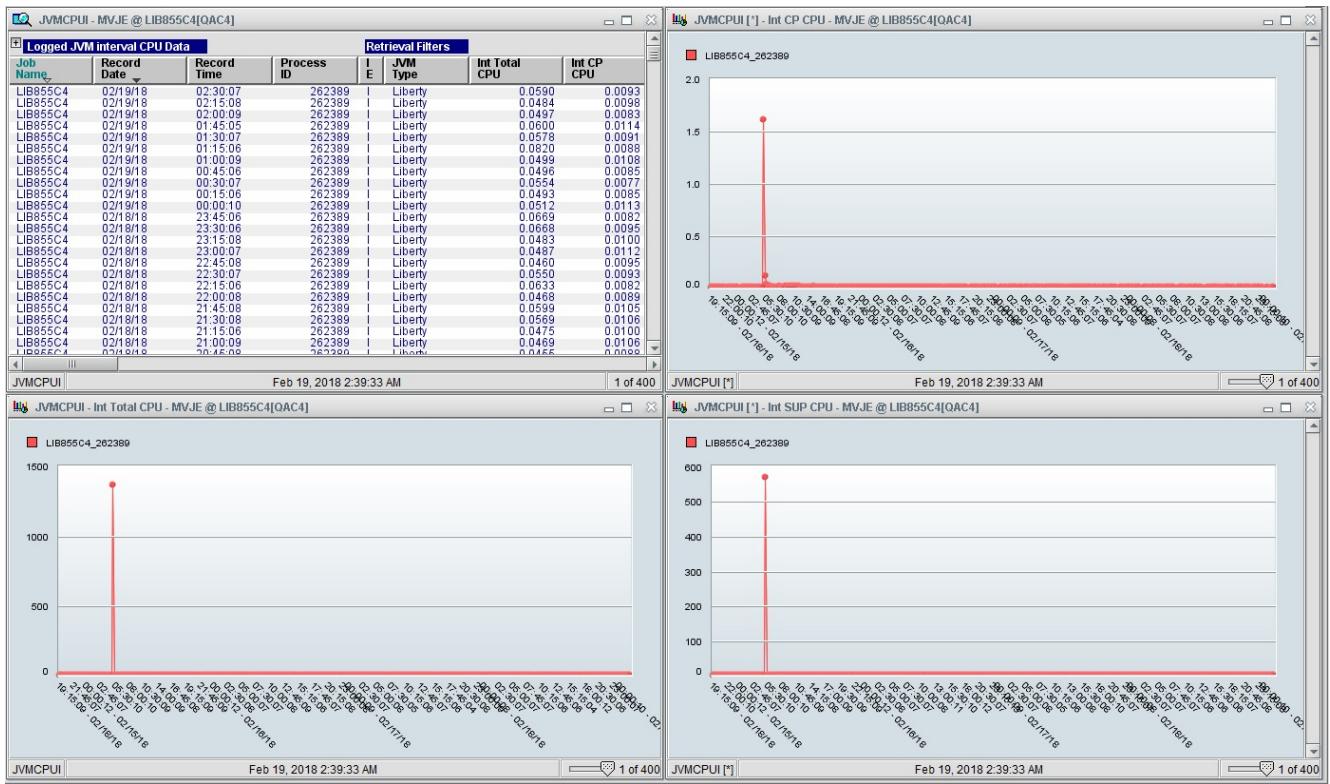
Related topic

Overview of the z/OS Connect EE easy menu (EZCONN)

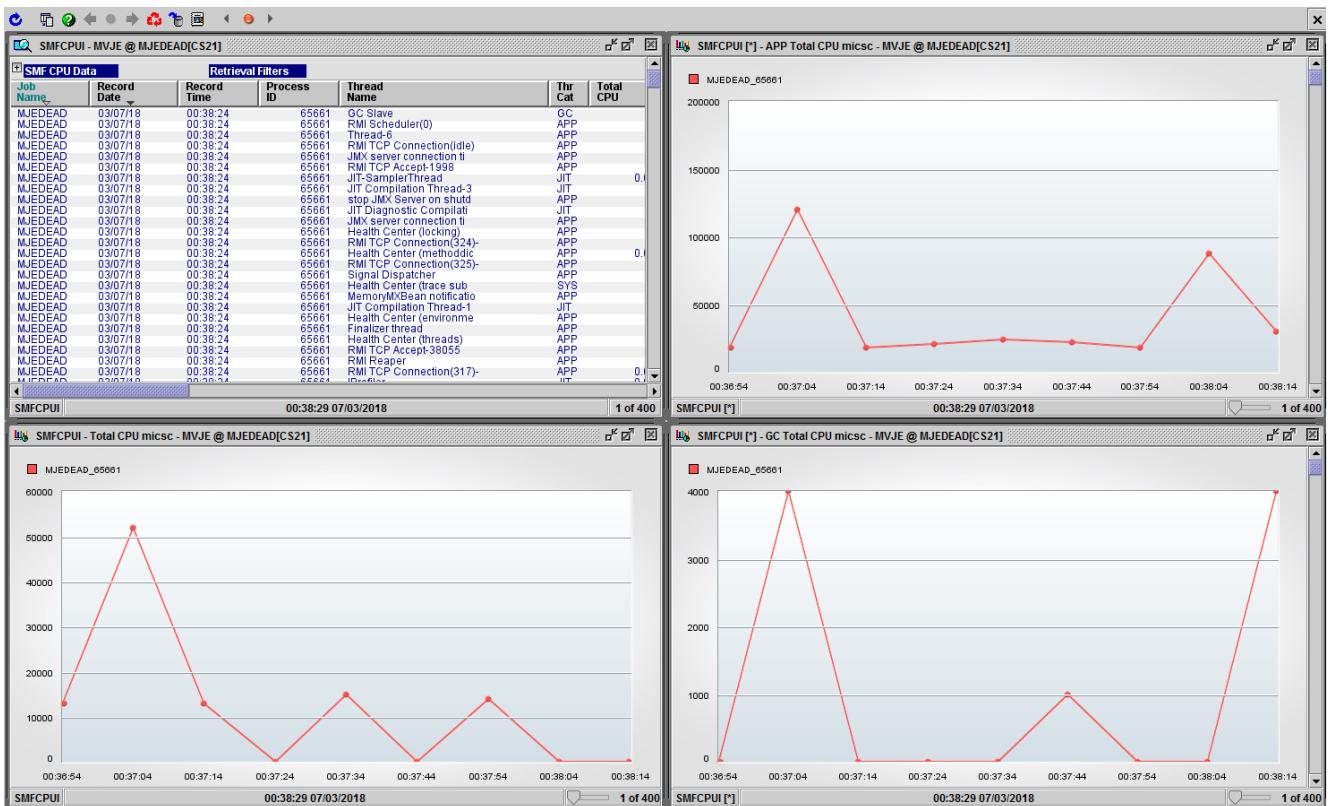
View containers

In MainView Explorer, you can access *view containers* for interval views. View containers show view data and graphs together in one tab. A view container is similar to a screen in windows mode. You can open multiple view containers in separate tabs and add them to the stack of panes or detach them (just like regular views). For more information about view containers, see [Using BMC AMI Ops products](#).

The following figure shows a sample JVMCPUI view container:



The following figure shows a sample SMFCPUUI view container:



Related topic

[NGL Logged Data](#)

Working with timed discovery

For users who set up BMC AMI Ops Monitor for Java Environments to use timed discovery, this section explains how to discover new JVMs on demand, and how to change the timed interval.

This section contains the following topics:

- Discovering new JVMs on demand (timed discovery only)
- Changing the interval for timed discovery

Related topic

[Using](#)

Discovering new JVMs on demand (timed discovery only)

Use the following procedure if you want to discover new JVMs on demand, between the timed intervals.

 **Note**

This procedure has no effect if your product uses auto discovery of JVMs.

To discover new JVMs

1. On EZJE, select **Current Active JVM** and press **Enter**.

The JVMDISC view lists the currently discovered JVMs that are running on your system. For more information about JVMDISC, see [All JVM Views](#).

2. On the **COMMAND** line, enter **DISC**.

If new JVMs were discovered, they now appear in the list.

Related topic

[Working with timed discovery](#)

Changing the interval for timed discovery

Use the following procedure if you are using timed discovery and want to change the timed interval.

1. On EZJE, hyperlink on **Parm Members**.
2. On the PASPARM view, type **E** in the **CMD** column next to the MJEINlx member that the product is currently using.
3. Add the JVMDISC parameter to the member or, if already present, change the parameter's value.
Valid values are 1 through 999 seconds. For example, JVMDISC=90 sets the interval to 90 seconds.

 **Note**

If MJEINlx does not include a JVMDISC parameter, the default interval (10 seconds) applies.

4. Save the updated MJEINlx member.
5. Restart the BMC AMI Ops Monitor *for Java Environments* PAS.

Related topic

[Working with timed discovery](#)

Viewing or editing PAS parameters with the PARMEDT view

After product set up, you can confirm that PAS initialization and environmental parameters are set up properly by accessing the PARMEDT views. On PARMEDT, you can also change and install parameters.

- ⚠** BMC AMI Ops Infrastructure version 6.3 is required to view and edit product initialization and environmental parameters on the PARMEDT view.

To confirm initialization and environmental parameters on PARMEDT

1. On EZJE, hyperlink on **Easy Administration**.
2. Hyperlink on the following options:
 - MJEINI Settings
 - MJEENV Settings

The PARMEDT view is displayed. If any required parameters are missing, a message lists them.

To view defined parameter values

1. Enter **B** in the **CMD** column next to a parameter name.
A dialog box displays the defined parameter values.

To edit and install parameter values

1. On the **COMMAND** line, enter **EDIT**.
2. Type **E** or **CHA** in the **CMD** column next to a parameter name.
A dialog box displays the defined parameter values.
3. In the **Edit Keyword** dialog, make changes as required and type **SAVE** on the **COMMAND** line.
4. On PARMEDT, enter **INSTALL** on the **COMMAND** line.

Related topic

Using

Viewing or editing PAS parameters and SSL members on the PASPARM view

Use the following procedure to view or edit PAS parameters and SSL members on the PASPARM view.

The PASPARM view lists all installed parameter members. Members that the BMC AMI Ops Monitor for Java Environments PAS is currently using are highlighted in green.

⚠ Important

PASPARM also shows members containing target definitions. However, you cannot manually edit target members. For more information, see [Editing JVM target definitions](#).

To view or edit PAS parameter members

1. On EZJE, hyperlink on **Parm Members**.

The PASPARM view is displayed.

PAS Parameter Members						
Pattern	DDname:	BBIPARM				
CMD	Name	Sfx	E	PAS	CCat Dataset Name	Description
---	---	---	---	---	Lvl	---
MJEEENV00	Yes Y MJGX		1	MVSGXD.MJECD0.UBBPARM		MJEJVM Environment
MJEEENV01	Yes Y MJGX		1	MVSGXD.MJECD0.UBBPARM		MJEJVM Environment
MJEINI00	Yes Y MJGX		1	MVSGXD.MJECD0.UBBPARM		Initialization Par
MJEJTB00	Yes Y MJGX		2	MVSGXD.MJECD0.BBPARM		JVM Identification
MJETGT00	Yes N MJGX		1	MVSGXD.MJECD0.UBBPARM		Target Definitions
MJETGT01	Yes N MJGX		1	MVSGXD.MJECD0.UBBPARM		Target Definitions

2. Take one of the following actions:

- To view a member, type **V** in the **CMD** column next to a member name and press **Enter**.
- To edit a member, type **E** in the **CMD** column next to a member name and press **Enter**.

⚠ Important

If you edited the initialization or environmental member that BMC AMI OpsMJE is currently using, you must restart the PAS for the changes to take effect.

Related topic

Using

Creating SSL members

You can create SSL members when you create or edit a target definition. Alternatively, you can create an SSL member at any time by using a global line command, as explained in the following procedure.

1. From any BMC AMI Ops Monitor for Java Environments view, type **ADDSEC** on the **COMMAND** line.

The **Create Security Member Dialog** is displayed.

Create Security Member Dialog					
COMMAND ==>	SCROLL ==> PAGE				MORE: +
Security Information					
Description	JMX Security Definition				

Member Suffix	NO	Suffix
SSL Enabled	N	SSL to remote JVM
Password Auth	N	Password Check
Client Auth	N	Client must Auth
SSL Debug	N	SSL Debug Info
Keystore		
Key Password		
Key Type		
Truststore		
Trust Password		
Trust Type		

2. Complete the fields as described in the following table:

Field	Default value	Description
Description= <i>description</i>	No default	Description of the SSL member
Member Suffix=xx	xx	Suffix for the new SSL member Define a two-character number or alphanumeric suffix.
SSL Enabled=[YES NO]	N	Whether the target JVM requires SSL security for the connection
Password Auth=[YES NO]	N	Whether to enable password checking at the client
Client Auth=[YES NO]	N	Whether the target JVM requires SSL client authentication
SSL Debug=[YES NO]	N	Whether to create debug information on connection communications
Keystore= <i>keystorePath</i>	No default	USS path to a keystore for SSL handshaking When the target JVM requires SSL security (SSL Enabled=YES), the implementation of SSL security is either Java SSL (JSSE) or RACF SSL. Valid values are as follows: <ul style="list-style-type: none"> • Java SSL (JSSE) – the file path of the keystore

Field	Default value	Description
		<ul style="list-style-type: none"> • RACF SSL – the name of the RACF keyring
Key Password= <i>keystorePassword</i>	No default	Password for the specified keystore
Key Type= <i>keystoreType</i>	No default	<p>Type of keystore</p> <p>Valid values are:</p> <ul style="list-style-type: none"> • Java SSL (JSSE) – JKS • RACF SSL – JCERACFKS
Truststore= <i>truststorePath</i>	No default	<p>USS path to a truststore for SSL handshaking</p> <p>When the target JVM requires SSL security (SSL Enabled=YES), the implementation of SSL security is either Java SSL or RACF SSL.</p> <p>Valid values are as follows:</p> <ul style="list-style-type: none"> • Java SSL (JSSE) – the file path of the truststore • RACF SSL – the name of the RACF keyring
Trust Password= <i>truststorePassword</i>	No default	Password for the specified truststore
Trust Type= <i>truststoreType</i>	No default	<p>Type of truststore</p> <p>Valid values are:</p> <ul style="list-style-type: none"> • Java SSL (JSSE) – JKS • RACF SSL – JCERACFKS

3. On the **COMMAND** line, enter **SAVE**.

Related topic

[Setting up JVM targets individually](#)

[Using](#)

Changing the context to view JMX data for a JVM target

You can see JMX data for all JVMs that have a JMX port defined. You can see JMX data for a specific JVM by switching the context to the context of the target JVM. Use one of the following procedures to switch the context.

To switch the context by using the CONtext command

On the **COMMAND** line, type **CON *jobName*** and press **Enter**.

To switch the context from the JVMDISC view

On EZJE, take one of the following actions:

- Select **Active JVM Targets** and hyperlink on the **Job Name** field for a JVM.
- Select **Current Active JVMs** and hyperlink on the **JMX** field for a JVM.

 **Note**

The value in the **JMX** field must be Yes, indicating that a JMX port is defined for the JVM.

The EZJE menu is displayed with additional JMX menu items for the specified JVM.

Related topic

Using

Adding JVMs to the Watch List

You can monitor the status of JVMs by adding entries to the Watch List. The WATCHLTZ view lists all of the JVMs on the Watch List, and their status. The Watch List (**W**) column on JVMDISC also indicates whether a JVM is on the Watch List.

You can add multiple entries for a JVM with different monitoring criteria. For example, you can add a generic entry with minimal monitoring criteria to monitor all JVMs with the same job name, and another entry to monitor one of the JVMs with a specific port number and system name. The **Cnt** field indicates the number of entries for a JVM. You can hyperlink on the **Job Name** field to see all of the entries for a JVM on the WATCHLST view.

You can set alarms on the WATCHLST and WATCHLTZ views to alert you when the status of a JVM changes.

To add JVMs to the Watch List

1. Use one of the following methods:
 - To add a new JVM to the Watch List:
 - On JVMDISC, type **WAT** on the **COMMAND** line.
 - On WATCHLTZ or WATCHLST, type **ADDI** on the **COMMAND** line.
 - To add a new entry for a JVM that exists on the Watch List, on WATCHLST type **ADD** in the **CMD** column for the JVM.
2. In the Watch List Item Add dialog box, complete the following fields and type **ADD** on the **COMMAND** line.

Field name	Description
(Required) Job Name	Name of the job that is associated with the address space in which the JVM is running
(Optional) Port	Port number to monitor
(Optional) System Name	Name of the system on which the JVM is running
(Optional) Server Name	Name of the server on which the JVM is running
(Required) Member Suffix	Suffix of the MJEWLTxx member in which to save the entry
(Required) Overwrite	Whether to overwrite the existing MJEWLTxx member

For more information about using the Watch List, you can also view a [short video](#).

Related topics

[Parameter Management views](#)

[All JVM Views](#)

[Using](#)

Identifying blocked threads

You can identify blocked threads on the Thread Contention (THRDCON) view. On THRDCON you can identify threads that are in blocked state. A blocked state exists when one method is waiting for a Java resource held by another thread in the same JVM.

To identify blocked threads

1. Select the **Thread Contention** option on EZJE.
2. Hyperlink on the **Thread Name** field for a thread in **BLOCKED** state to see additional information in on the Thread Detail view (THRDDTLD).

Example

The following figure shows a sample of the THRDCON view with contentions (BLOCKED thread state) in Thread-10, Thread-11, Thread-13, Thread-14, Thread-17:

CURR WIN ==> 1	ALT WIN ==>	Method	Line Number	Thread State	Lock Owner
+W1 =THRDCON=====	MJETARG2=*****		24FEB2017==10:30:43==	MV JE=====D====28	
Thread Name		Name			Name
Thread-10		run	22	BLOCKED	Thread-11
Thread-10		run	798		Thread-11
Thread-11		run	22	BLOCKED	Thread-10
Thread-11		run	798		Thread-10
Thread-13		run	15	BLOCKED	Thread-12
Thread-13		run	798		Thread-12
Thread-14		wait		Native WAITING	Thread-15
Thread-14		wait	167		Thread-15
Thread-14		run	18		Thread-15
Thread-14		run	798		Thread-15
Thread-17		park		Native WAITING	Thread-18
Thread-17		park	198		Thread-18
Thread-17		parkAndCheckInterrupt	846		Thread-18
Thread-17		acquireQueued	879		Thread-18
Thread-17		acquire	1209		Thread-18
Thread-17		lock	226		Thread-18
Thread-17		lock	302		Thread-18

In this example, you can hyperlink from Thread-10 to access detailed information on the THRDDTLD view:

```

CURR WIN ===> 1      ALT WIN ===>
>W1 =THRDCON==THRDDTLD=MJETARG2=====24FEB2017==10:30:43====MVJE=====D=====
  Process ID..... 201970          Entry Date...
  Thread ID..... 28             Entry Time...
  Thread Name.... Thread-10
  Class Name..... com.bmc.mje.test.ClaspOne
  File Name..... ClaspOne.java
  Method Name.... run
  Line Number.... 22
  Thread State... BLOCKED
  Native Code.... No
  Wait Count..... 1
  Blocked Object. java.lang.String@d388acf1
  Lock Owner Name Thread-11
  Trace Depth.... 0
  Time Waiting.... 0
  Time Blocking... 0
  Block Count.... 1
  Suspend Status. No

```

On THRDDTLD, **Lock Owner Name** shows the line number of the Java class in another thread (Thread-11) where the lock occurred. **Blocked Object** identifies the object for which the blocked thread (Thread-10) is waiting (java.lang.String@d388acf1).

Transforming historical z/OS Connect EE detail data into CSV files (PTF BPF0457 applied)

BMC AMI Ops Monitor for Java Environments can extract historical z/OS Connect EE detail data from active NGL logsets and transform the extracted data into comma-separated values (CSV) format. You can then analyze the extracted CSV data in off-mainframe data analytics tools, such as Excel or Splunk.

BMC AMI Ops MJE extracts the data by using the MJE9NGEX utility and transforms the data into CSV format by using the BMC AMI Ops Infrastructure Data Transformation utility (BBM9MD75). The MJE9NGEX utility is similar to the BMC AMI Ops Infrastructure History File Extraction utility (BBM9MD73).

To run MJE9NGEX, customize and submit the MJENGL75 BBSAMP member. MJE9NGEX creates a data set containing the extracted data. The data set is formatted with the common header, and includes data from the following **OREC DSEC** fields:

- **ORECTIME**
- **ORECRTIN**
- **ORECSYS**
- **ORECISID**
- **ORECOTYP**
- **ORECRES**

This data set is used as the input for the BBM9MD75 utility. To run BBM9MD75, customize and submit the MJENGL75 BBSAMP member. MJENGL75 creates a data set containing the transformed CSV data. This process is explained in the following procedures.

For more information about extracting and transforming history data for BMC AMI Ops Infrastructure products, see [Working with historical data](#).

Before you begin

Make sure that the BMC Execution Component for z/OS (DBC) and the Next Generation Logger (NGL) agent are up and running.

To extract the data

Customize and submit the MJENGLEX member in BBSAMP as follows:

1. Insert a valid JCL job card.
2. Replace the variables in the following DD statements:

DD statement	Variable	Description
STEPLIB	?BBLINK?	MJE BBLINK library
	?XXLINK?	MJE XXLINK library
OUTPUT	?OUTPUTDSN?	Output data set to send the z/OS Connect EE detailed data in normalized format

3. Specify the following parameters:

Parameter	Description
TYPE=[CDO ZC1 ZCD S79 S80]	<p>(Required) Type of record to extract</p> <ul style="list-style-type: none"> • CDO—All JVM CPU detail • ZC1—z/OS Connect EE API Requester detail • ZCD—z/OS Connect EE SMF123 API Provider detail • S79—JZOS and IMS SMF 121-1 & 29-2 detail • S80—JZOS CPU SMF detail <div style="border: 1px solid #f0e68c; padding: 10px; margin-top: 10px;"> <p>Note</p> <p>To select multiple record types, submit the MJENGLEX JCL separately for each record type and concatenate the output data sets into a single data set. Then, specify that data set as input for the MD73IN DD statement in the MJENGL75 JCL.</p> </div>
DBCSSID=dbcSsid	(Required) Database collector SSID

Parameter	Description
NGLPIID= <i>nglPiid</i>	<i>(Required)</i> NGL PIID for the NGL agent
STARTTIME=[<i>DDMMYYYY-HH:MM:SS</i> <i>YESTERDAY</i>]	<p data-bbox="689 428 1451 462"><i>(Optional)</i> Date and time from which to start extracting NGL records</p> <div style="border: 1px solid #f0e68c; padding: 10px; margin-top: 10px;"> <p data-bbox="720 518 795 548">Notes</p> <ul style="list-style-type: none"> <li data-bbox="822 563 1430 653">• The STARTTIME and ENDTIME parameters enable you to limit the number of extracted records to NGL records created during the specified time period. <li data-bbox="822 669 1335 732">• If you don't specify values for STARTTIME and ENDTIME, all records are extracted. <li data-bbox="822 747 1356 810">• If you specify YESTERDAY, records are extracted between 00:00—24:00 on the previous day. <li data-bbox="822 826 1419 889">• If you specify YESTERDAY, you cannot specify a value for ENDTIME. </div>
ENDTIME= <i>DDMMYYYY-HH:MM:SS</i>	<i>(Optional)</i> Date and time to stop extracting NGL records

Examples

The following example extracts SMF123 API Provider detail data from 00:00—24:00 on the previous day:

```
.....
//MJE9NGEX EXEC PGM=MJE9NGEX,REGION=0M
//SYSIN      DD   *
              TYPE=ZCD,
              DBCSSID=SNDC,
              NGLPIID=SNNG,
              STARTTIME=YESTERDAY
/*
....
```

The following example extracts API Requester detail data from April 01, 2021 to April 22, 2021:

```
.....
//MJE9NGEX EXEC PGM=MJE9NGEX,REGION=0M
//SYSIN      DD   *
              TYPE=ZC1,
              DBCSSID=SNDC,
              NGLPIID=SNNG,
              STARTTIME=01APR2021-00:00:00,
              ENDTIME=22APR2021-23:59:59
/*
....
```

4. Submit the JCL by typing **SUB** on the command line.

The data is extracted to the specified OUTPUT data set in a normalized format. For extraction details, see the SYSPRINT DD card. If SYSPRINT contains return codes, see [Return codes used by MJE9NGEX](#).

Example

```
.....  
MJENGX01I STARTING NGL EXTRACTING PROGRAM...  
MJENGX02I NGL CLIENT PROGRAM LOADED  
MJENGX03I CONNECTION TO NGL ESTABLISHED  
MJENGX04I NUMBER OF NGL RECORDS EXTRACTED SUCCESSFULLY : .000671.....  
.....
```

To transform the data

Customize and submit the MJENGL75 member in BBSAMP as follows:

1. Insert a valid JCL job card.
2. Replace the variables in the following DD statements:

DD statement	Variable	Description
OUT1	?OUTPUTCSV?	CSV data set
STEPLIB	?BBLINK?	MJE BBLINK library
MD73IN	?INPUTDSN?	Data set containing the generated output of the MJENGL75 JCL This is the OUTPUT data set specified in the MJENGL75 JCL. Alternatively, if you created multiple OUTPUT data sets for different record types, specify the concatenated data set.
BBACTDEF	?BBACTDEF?	BBACTDEF library where MJFTDM resides
BBSAMP	?BBSAMP?	BBSAMP library where the product's data maps reside
BBMAP	?BBMAP?	BBMAP library where the product's data maps reside

3. Insert a SELECT query statement specifying the record entries (REs) that you want to filter, and the product data map that contains the REs.

Example

The following statement selects data from the S123JOB, S123TYPE, and S123SYSN REs from the MJFUZCD0 data map:

```
SELECT S123JOB, S123TYPE, S123SYSN  
FROM    MJFTDM.MJFUZCD0
```

For more information about SELECT statements, see [Transforming historical data](#).

4. Submit the JCL by typing **SUB** on the command line.

The CSV data is loaded into the specified OUT1 data set. You can use the FTP function to download the data set to your computer.

Return codes used by MJE9NGEX

MJE9NGEX might issue the following return codes during processing. In general, any non-zero condition code is accompanied by a message that indicates the source of the error.

Return code	Description
0	Indicates successful NGL data extraction
4	Invalid parameter syntax
8	Open for INPUT file, failed
12	Open for SYSPRINT, failed
16	Open for OUTPUT file, failed
20	Load NGL communication program, failed
24	Connection to the NGL agent, failed
28	Error retrieving first NGL record
32	Bad NGL request function

Return code	Description
36	Storage obtain for OREC DSECT, failed
40	NGL record has no length
44	NGL record problem
48	Invalid record type entered
52	Invalid date for STARTTIME
56	Invalid date for ENDTIME
60	Invalid time for STARTTIME
64	Invalid time for ENDTIME
68	Invalid format for STARTTIME or ENDTIME
72	Conversion from regular date and time to STCK, failed
76	Conversion from STCK to regular date and time, failed
80	Conversion from current time to the STCK format, failed
84	YESTERDAY option invalid if ENDTIME is specified
88	Setting SYSCLONE suffix failed

Related topics

[Data extraction parameters \(MJENGL75\) \(PTF BPF0457 applied\)](#)

[Data transformation parameters \(MJENGL75\) \(PTF BPF0457 applied\)](#)

[Using](#)

Working with logsets

BMC AMI Ops Monitor for Java Environments logs data in multiple logsets. Allocation and retention of a logset is controlled by the BBIPARM member MJELGnx:

- *n* represents the type of data contained in the logset. Possible values are:
 - A, all JVM CPU data
 - G, SMF garbage-collection data
 - C, SMF CPU data
 - V, environmental data
 - L, loaded classes data
 - O, object allocation data
 - Z, z/OS Connect EE request data
- *xx* represents the suffix of the logset. The default logsets use the suffix 00.

The logset names are MVJEn_xxxx:

- *n*, as described above.
- *xxxx*, representing the NGL ID

You will see logsets listed with this naming format in the PAS log. You can view and edit defined logset members on the PASPARM view.

Default logset definition members are shipped with the product. If you want to change the parameters specified for a logset member, you must create a new member in the UBBPARM data set. You can then update the MJELOG parameter in MJEINLxx with the suffix of the new logset definition.

When the BMC AMI OpsMJE PAS starts, it searches for logset definitions with the new suffix in the UBBPARM data set. If the PAS does not find all of the required logsets with the new suffix, the remaining logsets default to 00 logset definition members.

Example

The PAS requires six logsets. You create two new logset members with the suffix yy and specify MJELOG=yy. When you restart the PAS, it responds as follows:

- Searches for members with the yy suffix and finds two members
- Requires an additional four logset members
- Uses four default logset members with the suffix 00

Related topic

Using

Requesting a stack trace for a thread

(BMC.AMIOPS.SPE2110) 

You can request a stack trace for a thread on the Thread detail summary (THRDDTLZ) and Thread Contention (THRDCON) views. The requested trace is saved to the stack trace path that is specified in the TRACEPATH parameter in MJEINI00. You can temporarily update the stack trace path, as explained in the following procedure:

To temporarily update the stack trace path

1. On the THRDDTLZ or THRDCON view, type **PATh** on the command line.

The Change Trace Path Directory dialog displays the current stack trace path. If you previously updated the stack trace path, this value differs from the TRACEPATH value that is specified in MJEINI00.

```
+----- Change Trace Path Directory -----+
| COMMAND ==>                               SCROLL ==> PAGE |
| | Stack Trace path:                      |
| | /shrd/mjeqa/out33                     |
| |                                         |
| |                                         |
| | UPDate to update a stack trace path   |
| | CANcel to exit the dialog              |
| | HELP to display help                  |
+-----+
```

2. Update the path to which you want to save the stack trace and type **UPPDate** on the command line.

When you restart the MVJE PAS, the stack trace path reverts to the value specified for TRACEPATH in MJEINI00. For more information, see [Product initialization parameters](#).

To request a stack trace

On the THRDDTLZ or THRDCON view, type **TRC** in the **CMD** column for a thread.
The MJFX0316I message notifies you of the trace location.

Example of a stack trace

```
VIEW      /home/bolrnxg/trace/trace2/MJEDEAD.Thread5.17AUG2021.070334.17371467.txt
Command ==>
=====
==MSD> -Warning- The UNDO command is not available until you change
==MSD>   your edit profile using the command RECOVERY ON.
000001 RMI TCP Accept-42265:
000002   java.net.PlainSocketImpl.socketAccept (Native method)
000003   java.net.AbstractPlainSocketImpl.accept (AbstractPlainSocketImpl.java:line#450)
000004   java.net.ServerSocket.implAccept (ServerSocket.java:line#623)
000005   java.net.ServerSocket.accept (ServerSocket.java:line#582)
000006   sun.rmi.transport.tcp.TCPEndpoint$AcceptLoop.executeAcceptLoop (TCPTransport.java:line#417)
000007   sun.rmi.transport.tcp.TCPEndpoint$AcceptLoop.run (TCPTransport.java:line#389)
000008   java.lang.Thread.run (Thread.java:line#822)
=====
Bottom of Data =====
```

Related topics

[Using](#)

[Usage data \(JMX\) views](#)

Requesting a dump for a JVM (PTF BPF0457 applied)

Use the following procedure to request a dump for a JVM.

To request a dump

1. On JVMDISC, type **DMP** in the **CMD** column for a JVM.
2. In the Dump Java Virtual Machine dialog, type **S** next to one or more dump types:
 - SVC Dump
 - Java Core Dump
 - Java Heap Dump (*Liberty JVMs only*)
 - Server Dump (*Liberty JVMs only*)

```
+----- Dump Java Virtual Machine -----+
| COMMAND ==>                               SCROLL ==> CSR |
|
| JVM's information:
| Job Name BAQSTSMN
| JVM Type Zconnect
| PID      50921755
| ASID     00C5
|
| Dump options:
| Use 'S' to select.
| _ SVC Dump
| _ Java Core Dump
| _ Java Heap Dump
| _ Server Dump (Core/Heap dumps are included in the dump package)
```

```

| Time out interval: 10 (In seconds. Default is 10 sec [Integer])
|
| EXEC to request DUMP
| CANcel to exit without requesting a DUMP
| HELP to display help
|
+-----+

```

- In the **Time out interval** field, specify the number of seconds that you want to wait for a response.

⚠ Notes

- If you specified a Server dump, consider setting this value to 10 seconds (the default).
- This field is valid only for Liberty JVMs.

- On the command line, type **EXEC**.

⚠ Note

If BMC AMI OpsMJE detects that a Liberty JVM has an identical job name and job identifier, the dialog displays a warning message.

If you have only one Liberty JVM with an identical job name and job identifier, BMC AMI OpsMJE requests a dump for that JVM. However, if you have multiple Liberty JVMs with an identical job name and job identifier, BMC AMI OpsMJE requests a dump for all instances of the JVM.

You can check whether multiple JVMs are running with the same job name and job identifier by comparing the values in the **Job Name** and **Step Name** fields.

When the dump has finished, **OK** is displayed in the **CMD** column.

- View the status of the dump in the JVM's Job log. For Liberty JVMs, the name and location is also displayed.

⚠ Notes

- (For non-Liberty JVMs) SVC dumps contain the ASID of the BMC AMI OpsMJE PAS and the ASID of the JVM on which you requested a dump. You can see a message about the requested dump in the PAS log.
- For IMS JVMs, the dump is generated when the JVM shuts down, or when the IMS is receiving signals.
- The default directory for Java core and heap dumps is your home directory. For more information about changing the location of the dumps, search for the following topics in the IBM documentation:
 - (For CICS JVMs) Controlling the location for JVM output, logs, dumps and trace (<https://www.ibm.com/docs/>)
 - (For WAS JVMs) WebSphere Application Server Dump Locations and Setup (<https://www.ibm.com/support/>)

Related topic

Using

Shutting down the product JVM (MJEJVM)

You can shut down the product JVM (MJEJVM) while the PAS is running, which enables you to stop the product for troubleshooting or maintenance purposes.

1. On the **COMMAND** line, type **PMJEJVM** and press **Enter**.

Related topic

Using

Restarting the product JVM (MJEJVM)

After shutting down the product JVM (MJEJVM), you can restart the JVM while the PAS is running.

1. On the **COMMAND** line, type **SMJEJVM** and press **Enter**.
2. On the **COMMAND** line of the **Start the MJEJVM panel**, type **Stjvm** and press **Enter**.

Related topic

Using

Stopping the BMC AMI Ops Monitor for Java Environments PAS

If you need to stop the BMC AMI Ops Monitor for Java Environments PAS for any reason, use the following procedure.

1. Verify the procedure name for the PAS.
2. From the system operator console, enter the STOP (or P) command:

```
P <procName>
```

 **Best Practice**

BMC recommends using the STOP command rather than the CANCEL command to stop the PAS. Also, you should ensure that the PAS is properly shutdown before performing an IPL.

Related topic

Using

Offloading debugging information

If requested by BMC Support, you might need to offload debugging information. The PAS proc in the STGSAMP library (member prefix MVJ*) specifies the file location for BMC AMI Ops Monitor *for Java Environments* to offload debugging information when the PAS shuts down.

The default file locations are:

```
.....
//BMCMMSGLG DD  SYSOUT=*= DBINFO
//STDOUT    DD  SYSOUT=*= MJEJVMOUT.SSID
//STDERR    DD  SYSOUT=*= MJEJVMERR.SSID
//SYSOUT    DD  SYSOUT=*
```

You can also offload debugging information (without shutting down the PAS), by executing the following commands:

- PRINTD—offloads MJE PAS debug data to SYSOUT
- PRINTZ—offloads JVM log messages to STDOUT and STDERR

Related topic

Reviewing and defining BMC AMI OpsMJE PAS parameters

Using

Reference

The topics in this section contain reference information:

- Sample JCL members

Sample JCL members

The following topics show JCL sample members for version 3.2:

- Product initialization parameters ([MJEINI00](#))
- Environmental parameters ([MJEENV00](#))
- Target parameters ([MJETGT00](#))
- Watch List parameters ([MJEWLTO00](#))
- Data extraction parameters ([MJENGLEX](#)) (PTF BPF0457 applied)
- Data transformation parameters ([MJENGL75](#)) (PTF BPF0457 applied)

Product initialization parameters ([MJEINI00](#))

The product distributes the following sample MJEINI00 member ([BMC.AMIOPS.SPE2204](#)):

```
*
* Description: BMC AMI OpsM for Java Environments Initialization Params
* lines are only read upto the first blank
*
*MJESHPATH - the path for the shell script RunMjeJvm.sh
*MJESHPATH=/this/is/the/pathname/for/the/shell/script/
*it/can/span/lines
MJESHPATH=/var/bmc/mje/
*
*DBCSSID - DBC SSID for NGL
DBCSSID=DC&SYSCLONE
*
*NGLPIID - the logger PIID
NGLPIID=MVJ1
*
*EVENTPORT - PAS port for receiving unsolicited messages from MJEJVM.
EVENTPORT=20333
*
*MJEENV - environment variables member
MJEENV=00
*
*REPORT - [ALL|TGT|OFF] collect JVM CPU History for All , Targets only, none
* If All or Yes - Collect for all JVMs
* If Tgt - collect only for target address spaces
* If No, do not collect
REPORT=ALL
*
*MVHISTORY=[YES|NO] MVI history collection setting
* If Yes, collect History for all targets as target history setting is set
* If No, do not collect MVI history.
MVHISTORY=YES
*
*MJETGT - Target suffix
```

```

MJETGT=00
*
*MJEJTB - JVM program identifier suffix
MJEJTB=00
*
*DEBUGLVL - 0-999 - set the debug level
DEBUGLVL=1
*
*MJEJVMT0 - 0-999 - set the timeout value for communicating with MJEJVM
*           value is in seconds. 0 no timeout.
MJEJVMT0=60
*
*SMF121=[Yes|No] collect JZOS SMF data
*
SMF121=YES
*
*SMF29=[Yes|No] collect IMS SMF data
*
SMF29=YES
*
*JVMDISC=1-999 timed Discovery interval when CSVFETCH exit is not available.
*           Value is in seconds. A check is made for new JVM and new
*           threads is made each interval.
*
JVMDISC=10
*
*AUTODISC=YES Auto Discovery is on by default when the CSVFETCH exit is
*           available. Auto Discovery is more efficient and accurate than
*           timed discovery. Set this value to NO to turn off auto discovery.
*PASCON=&SYSNAME The service point for the PAS is the PAS Jobname. An alternate
*           service point is specified by PASCON. The default for PASCON is
*           &SYSNAME.
*
*Default Values for logset allocation
*
*LSDATACLAS=
*LSMGMTCLAS=
*LSPREFIX=
*LSSTORCLAS=
*LSVOLSER=
*
*
*MJELOG=XX      Suffix for MJELGnXX parm members
*
MJELOG=00
*
*NGLREFRESH=[YES|NO] Yes - If MVJE determines a change has been made that
*           requires an NGL agent restart, allow the restart
*           to occur without intervention.
NGLREFRESH=YES
*
*AUTOTARGET=[YES|NO] Yes-   Enable Auto Target Create
AUTOTARGET=YES
*HCPORTSTART=1972      Starting port to scan for HealthCenter
HCPORTSTART=1972
*HCPORTEND            Ending port for HealthCenter Scan
*           default HCPORTSTART+100
*HEALTHCENTER=[Y|N]    Enable Health Center Support
HEALTHCENTER=Y
*MJEWLT - Watch List suffix
MJEWLT=00
*
*ARTIME - This value defines the approximate number of minutes data collected
* from the z/OS Connect EE interceptors will be kept in storage.
* This number affects the amount of data that will be displayed
* when reviewing z/OS Connect Current data.
* Older detailed data can be viewed from a historical point of view.

```

```

*ARTIME=05
*
*EMCSCNT=[1-9] - This value defines a number of EMCS consoles to be activated
*                  on PAS startup. Default is 1.
*EMCSCNT=1
*
*
*EMCSPREF      - This value defines a prefix for EMCS console name.
*                  This value must be 6 characters in length.
*                  Default value is OPSMJE.
*
*EMCSPREF=OPSMJE
*
*MJESTACK - TCP/IP stack name for MVJE PAS affinity.
*                  This is the jobname of the TCP/IP stack that MVJE will use
*                  rather than the default TCP/IP stack.
*                  It is used for communication with the MJEJVM and z/OS Connect EE.
*                  This parameter is optional.
*JMSEXSEARCH=YES
*      YES      Search for JMX if HC connected
*      NO       Only search if JMX port 0 found in Environment Data
*
*TRACEPATH=<path> - Path for Stack Trace file.
*                  Default - OUTPATH from MJEEENVxx.
*
*EVTZIIP={YES|NO}
*  YES  Running the event listener on zIIP can cause backlogs in TCP. Because of
*        zIIP requirements, the same instance of the listener must read and route
*        the incoming messages. With low traffic this is not a problem. In high
*        volume situations, like z/OS Connect EE intercepts or lots of events,
*        The backlog can be enough for TCP to reject messages.
*  NO   Setting this value to NO will cause a different version of the Event
*        Listener to run. This version is not zIIP eligible and has one listener
*        accepting sockets and giving to multiple instances of the router. This
*        keeps the backlog to a minimum.
*  Default - NO
*

```

Related topics

[Product initialization parameters](#)

[Sample JCL members](#)

Environmental parameters (MJEEENV00)

The product distributes the following sample MJEEENV00 member:

```

*****
* Description: BMC AMI OpsM for Java Environments - Environmental Params
*****
*  change /var/bmc/mje          mount point for MVJE zFS           *
*  change /usr/lpp/java         Location of v7+ 64bit java on your system   *
*  change ?TCPMJEPORT?         Port for MVJE to communicate with MJEJVM      *
*  change /tmp                  path where mjejvm output                   *
*  change ?wlmdir              path for ..clients/restConnector.jar      *
*****
*WLP_DIR= This is the WebSphere Liberty Profile (wlp) Directory. It is used for

```

```

*      locating the clients sub_directory. The Clients directory contains
*      the restConnector.jar file needed for gathering JMX data from Liberty
*      servers.
WLP_DIR=?wlpdir
*MJEPATH= Directory where MjeJvm.jar resides
MJEPATH=/var/bmc/mje
*
*JAVA_HOME= JDK home directory used by MJEJVM, must be Java 7 or later
JAVA_HOME=/usr/lpp/java
*
*OUTPATH= Where MJEJVM routes stdout & stdeerr to HFS as mjejvmout & mjejvmerr
OUTPATH=/tmp
*
***** MJEJVM PROPERTIES *****
*
*TCPMJEPORT= TCP port number where MJEJVM is listening on for MVJE requests
TCPMJEPORT=?TCPMJEPORT?
*
*COREMJETHREADS= Number of threads, must be > 0 and < MAXMJETHREADS
COREMJETHREADS=25
*
*MAXMJETHREADS= Maximum number of thread, must be > COREMJETHREADS
MAXMJETHREADS=75
*
*KEEPALIVESEC= Number of seconds inactive max threads retained in the pool
KEEPALIVESEC=90
*
*HOLDQSIZE= Number of threads can be in holding queue
*           This is used in the event that every thread is busy and a request
*           arrive in the MJEJVM
HOLDQSIZE=75
*
*MONINT= MJEJVM self-monitoring interval in seconds
MONINT=60
*
*XMS= JVM start Heap size (-Xms) in MB
XMS=4096m
*
*XMX= JVM maximum Heap size (-Xmx) in MB
XMX=4096m
*
***** BPX controls *****
*
*_BPXK_MDUMP= Where should java dump be directed
_BPXK_MDUMP=/tmp
*
*_BPX_JOBNAME=jobname for MJEJVM
_BPX_JOBNAME=MJEJVM

```

Related topics

[Environmental parameters](#)

[Sample JCL members](#)

Target parameters (MJETGT00)

The product distributes the following sample MJETGT00 member:

```

{
  "Targets" :
  [
    {
      "JobName" : "_DEFAULT",
      "Profiles" :
      [
        {
          "JvmId" : "_DEFAULT",
          "MvName" : "Built from _DEFAULT    ",
          "Protocol" : "JRMP",
          "JmxPort" : 0,
          "JmxSecSuff" : "NO",
          "Debug" : 0,
          "HcPort" : 0,
          "HcSecSuff" : "NO",
          "HcGc" : true,
          "HcClasses" : true,
          "HcCh" : 15,
          "HcOa" : true,
          "HcOaLow" : 0,
          "HcOaHigh" : 0,
          "HcFile" : false,
          "HcEvto" : true,
          "ZcHttp" : 0,
          "ZcHttps" : 0,
          "ZcSsl" : "NO",
          "History" : "D"
        }
      ]
    },
    {
      "JobName" : "_DEFREST",
      "Profiles" :
      [
        {
          "JvmId" : "_DEFREST",
          "MvName" : "Default REST profile   ",
          "Protocol" : "REST",
          "JmxPort" : 0,
          "JmxSecSuff" : "MV",
          "Debug" : 0,
          "HcPort" : 0,
          "HcSecSuff" : "NO",
          "HcGc" : true,
          "HcClasses" : true,
          "HcCh" : 15,
          "HcOa" : true,
          "HcOaLow" : 0,
          "HcOaHigh" : 0,
          "HcFile" : false,
          "HcEvto" : true,
          "ZcHttp" : 0,
          "ZcHttps" : 0,
          "ZcSsl" : "NO",
          "History" : "D"
        }
      ]
    }
  ]
}

```

Watch List parameters (MJEWLT00)

The product distributes the following sample MJEWLT00 member:

```
*****
* DESCRIPTION: BMC AMI OpsM FOR JAVA ENVIRONMENTS - WATCH LIST PARMs
*****
*MJEWLT00 SAMPLE (MJE WATCH LIST )
*THIS IS A WATCHLIST EXAMPLE FOR V3.2
*FORMAT:
*CSV STRING
*<PARM1>,<PARM2>,<PARM3>,<PARM4>
*<PARM1> - JOBNAM TO BE WATCHED LEN 8 - MANDATORY PARM
*<PARM2> - PORT LEN 5 - OPTIONAL
*<PARM3> - SYSTEM NAME LEN 8 - OPTIONAL
*<PARM4> - SERVER NAME LEN 32 - OPTIONAL
*TOTAL MAX LEN - 53 - WITH A LITTLE PADDING 60
*FEW EXAMPLES:
*<PARM1>,,,<PARM4>
*<PARM1>, OR <PARM1>
*<PARM1>,,<PARM3>,<PARM4>
*<PARM1>,<PARM2>,
*
*****
```

Data extraction parameters (MJENGLEX) (PTF BPFO457 applied)

The product distributes the following sample MJENGLEX member for extracting data:

```
//*- INSERT JOBCARD -
/*
//*****
//** CHANGE
//*
//** ?OUTPUTDSN?      TO YOUR OUTPUT DATASET
//** ?BBLINK?          TO YOUR MJE BBLINK LIBRARY
//** ?XXLINK?          TO YOUR MVI XXLINK LIBRARY
//*
//*****
//DELETE   EXEC PGM=IEFBR14
//OUTPUT   DD DSN=?OUTPUTDSN?, 
//        DISP=(MOD,DELETE,DELETE),
//        SPACE=(CYL,(4000,400),RLSE),UNIT=(BABDA,5),
//        DCB=(RECFM=VB,LRECL=32000,BLKSIZE=32760,DSORG=PS)
//*
//MJE9NGEX EXEC PGM=MJE9NGEX,REGION=0M
//STEPLIB   DD DSN=?BBLINK?,DISP=SHR
//          DD DSN=?XXLINK?,DISP=SHR
//SYSPRINT  DD SYSOUT=*
//OUTPUT   DD DSN=?OUTPUTDSN?,
//        DISP=(NEW,CATLG,DELETE),
//        SPACE=(CYL,(4000,400),RLSE),UNIT=(BABDA,5),
//        DCB=(RECFM=VB,LRECL=32000,BLKSIZE=32760,DSORG=PS)
//SYSIN     DD *
*GUIDELINES:
*^TYPE= { RECORD TYPES OPTIONS:           (REQUIRED)
*          CD0  - ALL JVM CPU DETAIL
*          ZC1  - Z/OS CONNECT EE API REQUESTER DETAIL
*          ZCD  - Z/OS CONNECT EE SMF123 API PROVIDER DETAIL
*          S79  - JZOS AND IMS SMF 121-1 & 29-2 DETAIL
*          S80  - JZOS CPU SMF DETAIL
*          }
*****
```

```

*^DBCSSID= {YOUR DBC SSID} (REQUIRED)
*^NGLPIID= {YOUR NGL PIID} (REQUIRED)
*NOTE: 1) STARTTIME/ENDTIME WILL BE CONVERTED TO GMT TIME.
*      2) STARTTIME/ENDTIME IS OPTIONAL PARAMETERS.
*STARTTIME= {TIME FORMAT RANGE: DDMMYYYY-HH:MM:SS OR YESTERDAY}
*ENDTIME= {TIME FORMAT RANGE: DDMMYYYY-HH:MM:SS}
*EXAMPLE OF RUNNING THE PROGRAM TO GET API REQUESTER DATA FROM
*00:00-24:00 ON THE PREVIOUS DAY:
*  TYPE=ZC1,
*  DBCCSID=SNDC,
*  NGLPIID=SNNG,
*  STARTTIME=YESTERDAY
*EXAMPLE OF RUNNING THE PROGRAM TO GET API PROVIDER DATA BETWEEN RANGE
*OF TIME:
*  TYPE=ZCD,
*  DBCCSID=SNDC,
*  NGLPIID=SNNG,
*  STARTTIME=01JAN2021-00:00:00,
*  ENDTIME=27APR2021-23:59:59
*AFTER THIS LINE SPECIFY YOUR PARAMETERS.
/*
//
```

Related topics

[Transforming historical z/OS Connect EE detail data into CSV files \(PTF BPF0457 applied\)](#)

[Sample JCL members](#)

Data transformation parameters (MJENGL75) (PTF BPF0457 applied)

The product distributes the following sample MJENGLEX member for transforming extracted data to CSV format:

```

//*- INSERT JOBCARD -
//*
//***** *****
//** CHANGE
//**
//** ?INPUTDSN?    TO YOUR GENERATED OUTPUT OF MJENGLEX JCL
//** ?OUTPUTCSV?   TO YOUR COMMA SEPARATED VALUE DATASET
//** ?BBLINK?      TO YOUR MJE BBLINK
//** ?BBACTDEF?    TO YOUR BBACTDEF WHERE MJFTDM RESIDES
//** ?BBSAMP?      TO YOUR BBSAMP WHERE PRODUCT DATA MAPS RESIDES
//** ?BBMAP?       TO YOUR BBMAP WHERE PRODUCT DATA MAPS RESIDES
//**
//***** *****
//**
//DELETE EXEC PGM=IEFBFR14
//OUT1   DD DSN=?OUTPUTCSV?,DISP=(MOD,DELETE),
//      SPACE=(CYL,(500,100),RLSE),UNIT=SYSDA,
//      DCB=(LRECL=32000,BLKSIZE=32760,RECFM=VB,DSORG=PS)
//MD75   EXEC PGM=IKJEFT01,REGION=0M,PARM='BBM9MD75'
//STEPLIB DD DSN=?BBLINK?,DISP=SHR
//SYSTSPRT DD SYSOUT=*
//SYSTSIN  DD DUMMY
//MD73IN  DD DSN=?INPUTDSN?,DISP=SHR
//BBACTDEF DD DSN=?BBACTDEF?,DISP=SHR
//BBSAMP   DD DSN=?BBSAMP?,DISP=SHR

```

```
//BBMAP      DD  DSN=?BBMAP?,DISP=SHR
//OUT1       DD  DSN=?OUTPUTCSV?,DISP=(,CATLG),
//  SPACE=(CYL,(500,100),RLSE),UNIT=SYSDA,
//  DCB=(LRECL=32000,BLKSIZE=32760,RECFM=VB,DSORG=PS)
//SYSIN      DD  *
*YOU CAN FOLLOW THE SAME GUIDELINES FOR TRANSFORMING HISTORICAL DATA
*IN THIS DOCUMENTATION LINK: https://docs.bmc.com/docs/x/pi7q0Q
*
*EXAMPLE OF WRITING QUERY STATEMENT TO SELECT FEW COLUMNS OF NGL RECORDS
*USING THE DATA MAP FOR SMF123 API PROVIDER DETAIL DATA:
*  SELECT S123JOB,S123STYPE,S123SYSN
*  FROM   MJFTDM.MJFUZCD0
*  ;
*AFTER THIS LINE, WRITE YOUR QUERY STATEMENT.
//
```

Transforming historical z/OS Connect EE detail data into CSV files (PTF BPF0457 applied)

Sample JCL members

Working with infrastructure

To manage your mainframe infrastructure and BMC AMI Ops infrastructure components, see the following spaces:

- Common mainframe infrastructure 
- BMC AMI Ops Infrastructure 

Messages

You can access the complete set of messages from the [Messages library](#). 

FAQs and additional resources

This topic answers common questions and explains how to access additional resources, including BMC Support.

Frequently asked questions

This section answers frequently asked questions (FAQs) about the documentation portal.

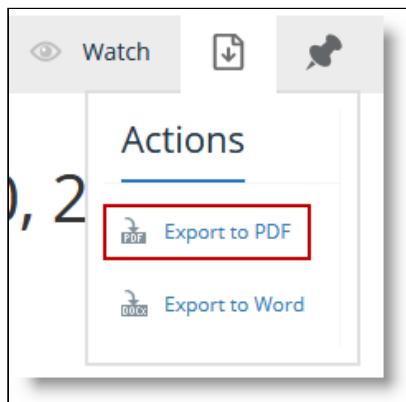
The following are general questions about mainframe documentation:

- How can I get a PDF of selected content in a space?

From any page in the space, use the following procedure to create a PDF of either the current page or multiple pages (a parent topic and its child topics):

- a. Go to the branch or topic for which you want to create a PDF.

- b. On the toolbar in the upper-right of the window, click  and select **Export to PDF**:



 **Important**

Although you can export to Microsoft Word, this portal is not optimized for Word exports. If you require an export in XML or HTML format, [contact us](#).

- c. In the Exporting PDF dialog box:

- In the **Template** box, select one of the following PDF styles:
 - **Simple** to export a PDF with no cover, table of contents, or index
By default, the Simple template exports only the current page.
 - **Standard** to export a traditional PDF with a cover, table of contents, and index
By default, the Standard template exports the current page and its child pages.

Example

In this example, selecting **This page and its children** creates a PDF of all topics in the space's "Reference" section:

The screenshot shows a BMC Documentation page for 'BMC AMI Utility Manager for Db2 12.1'. The left sidebar has a navigation tree with sections like 'About this space', 'Notices', 'Getting started', 'Installing', 'Customizing after installation', 'Using' (which is expanded to show 'Reference' and its sub-links), 'Reporting', 'Parameters', 'Command and syntax reference', 'Working with infrastructure', and 'Messages'. A red box highlights the 'Reference' link under 'Using'. To the right, there's a 'Space announcement' box with text about providing common information for all BMC AMI Utilities. Below the sidebar, the main content area is titled 'Reference' and lists topics such as 'Automation reference', 'BMCSYNC table', etc. At the bottom, there's a poll asking 'Was this page helpful?' with 'Yes' and 'No' buttons.

- In the **Export Scope** box, select what you want to export:
 - **Only this page** to export the current page
 - **This page and its children** to export an entire section (current page and any child topics)

d. Click **Export**.

For more information, see [Help for BMC Online Technical Documentation](#).

- Where can I get documentation for all mainframe BMC AMI Cost, BMC AMI Data for Db2, BMC AMI Data for IMS, BMC AMI Ops, and BMC AMI Security products?

Go to the [docs.bmc.com main dashboard](#) and click the **BMC Mainframe products (BMC AMI Cost, BMC AMI Data for Db2, BMC AMI Data for IMS, BMC AMI Ops, BMC AMI Security)** box, or [click here](#) to go directly to the list.

⚠ Important

If you're looking for the Control-M mainframe documentation, click the **Control-M** box on the dashboard, or [click here](#) to go directly to the Control-M space.

- Where can I get documentation for all BMC Compuware products?

Go to <https://docs.bmc.com/docs/compuware>.

Additional resources

The following BMC sites are external to this portal and provide information that you might find helpful:

- [BMC for Mainframes Community](#)
- [BMC Mainframe YouTube channel](#)

Support information

The following questions offer information about BMC Support:

- How can I contact BMC Support?

If you have problems with or questions about a BMC product, or for the latest support policies, go to [Support Central](#). You can search the Knowledge Base for help with an issue or download products and maintenance.

If you do not have access to the web and you are in the United States or Canada, contact BMC Support at 800 537 1813. Outside the United States or Canada, select your country at [Contact BMC](#) to view local Support Contacts.

- How can I check a product version's support status?

You can find the support status for specific product versions on [Support Central](#). Selecting a product from the “A–Z Supported Product List” shows:

- All versions of the product and their current support levels (full or limited)
- Dates on which support ends

You can also find information about the latest support policies on [Support Central](#).

- Where can I get the security certificates required to transfer files to BMC Support?

BMC Support requires a security certificate when you are using the File Transfer Protocol Secure (FTPS) method to send files to BMC Support. The [Secure File Transfer User Guide for BMC Customers](#) explains how to use the certificate.

The following table includes the security certificate:

Certificate	Validity
DigiCert Global Root G2	Effective from April 6, 2021, until further notice

Related topics

PDFs and videos

Date: 2022-04-5 3:45

URL: <https://docs.bmc.com/docs/x/Je0jOg>

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