



**ZEXPERT 100.003.1**

# **AutoPilot<sup>®</sup> M6 Plug-in for zExpert**

## **Installation and User's Guide**

### **Version 1.06**

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# Chapter 1: Introduction

This manual describes the installation and use of AutoPilot zExpert, hereinafter referred to as zExpert, including a section describing the diagnostic messages produced by zExpert Agent.

This product is compatible with any version/release of z/OS 2.1 or above.

Check this package's README.txt file for last minute changes.

## 1.1 How This Guide is Organized

- [Chapter 1:](#) Identifies the history of the document, its intended audience, and a listing of additional related documents. System requirements are outlined, along with technical support and reference information.
- [Chapter 2:](#) Contains a brief functional description of zExpert.
- [Chapter 3:](#) Provides instructions for new installations of the zExpert Agent on z/OS.
- [Chapter 4:](#) Provides instructions for installing zExpert's data collector for CICS.
- [Chapter 5:](#) Provides instructions for installing AutoPilot M6 and zExpert Plug-in.
- [Chapter 6:](#) Describes zExpert Agent diagnostic messages.
- [Chapter 7:](#) Describes performance metrics.
- [Appendix A:](#) Provides a detailed list of reference information required for installation of the zExpert.
- [Appendix B:](#) Contains conventions used in this document.
- [Glossary:](#) Definitions of unique and common acronyms and terms.
- [Index:](#) Contains an alphanumeric cross reference of topics and subjects of importance.

## 1.2 History of This Document

Table 1-1. Document History			
Release Date	Document Number	For AutoPilot Versions	Summary
June 2012	ZEXPERT 100.001	AutoPilot M6 or higher	Initial release
December 2013	ZEXPERT 100.002	AutoPilot M6 or higher	Added Chapter 7, Performance Metrics
November 2018	ZEXPERT 100.003	AutoPilot M6 or higher	Miscellaneous updates, added support for SysLogD (RFC 5424) in section 3.3.2.1
May 2022	ZEXPERT 100.003.1		Changed title to <i>Autopilot M6 Plug-in for zExpert Installation and User's Guide</i>

### 1.2.1 User Feedback

Nastel encourages all users and administrators of AutoPilot to submit comments, suggestions, corrections, and recommendations for improvement for all AutoPilot documentation. Please send your comments via e-mail to: [support@nastel.com](mailto:support@nastel.com). You will receive a written response, along with status of any proposed change, update, or correction.

## 1.3 Related Documents

The complete listing of related and referenced documents is listed in [Appendix A](#) of this guide.

## 1.4 Release Notes

See `README.txt` files on installation media. Release notes and updates are also available through the Resource Center at: [www.nastel.com/resources](http://www.nastel.com/resources).

## 1.5 Intended Audience

This document is intended for personnel installing and customizing Nastel's AutoPilot products. The installer should be familiar with z/OS system programming.

**NOTE:**

The installer may need administrative privileges for the target platform.

## 1.6 System Requirements

zExpert is compatible with AutoPilot M6 6.0.

The zExpert Process Wrapper is installed on an AutoPilot M6 CEP Server in the AutoPilot M6 network, where it can access the target application within the same network.

The zExpert Agent must be individually installed on each LPAR required.

**Supported environments:**

- Operating Systems
  - z/OS 2.1 and above
- Z/Architecture required
  - z9 and above (ARCHLVL=7 and above)
- IBM MQ for z/OS
  - Version 7.1 and above
- CICS/TS for z/OS
  - Version 5.1 and above
- DB2 for z/OS
  - DB2 10 and DB2 11
- AutoPilot run-time environment
  - AutoPilot M6 6.0
  - AutoPilot Reports 4.3 or higher

**Fixed Storage**

zExpert Agent does not allocate any fixed storage.

**Spool Requirements**

zExpert Agent uses very little spool space when the trace facility is not turned on. When the trace is active, log messages are written to zExpert Agent's log sysout files. Spool usage size may vary depending on volume of data collected.

**Disk Storage Requirements**

The zExpert Agent installation requires approximately 5 cylinders of disk space.

## 1.7 Technical Support

If you need additional technical support, you can contact Nastel by telephone or by e-mail.

- To contact Nastel technical support by telephone, call **800-963-9822 ext. 1**. If you are calling from outside the United States, dial **001-516-801-2100**.
- To contact Nastel technical support by e-mail, send a message to [support@nastel.com](mailto:support@nastel.com).
- To contact Nastel technical support through the support website (user ID and password are required), go to <http://support.nastel.com/btracker>, or visit the Nastel Resource Center at: <http://www.nastel.com/resources>.

Contact your local AutoPilot administrator for further information.

## 1.8 Terms and Abbreviations

A list of terms and abbreviations used in this document are located in the [Glossary](#).

## 1.9 Conventions

Refer to [Appendix B](#) for typographical and naming conventions used in all AutoPilot documentation.

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## Chapter 2: About zExpert

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The zExpert detects, gathers, and then analyzes z/OS, DB2, CICS/TS, and IBM MQ performance data in real-time, on-demand, and then summarizes the collective data into useful facts/metrics. The zExpert also logs data to a database, and provides reports (optional) for analyzing data and troubleshooting system problems. The performance data are obtained by zExpert's data collectors for z/OS components.

### 2.1 zExpert Agent

The zExpert Agent has two processes:

- Collection
  - z/OS
    - Console
    - System Log (syslog)
    - Batch Activity
    - JES SYSOUT
  - CICS
  - DB2
  - IBM MQ
- Publishing
  - Nastel Navigator (Nastel Facts / syslogD format (RFC 5424))
  - XRay (RFC 5424)

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# Chapter 3: Installing zExpert Agent

## 3.1 Transferring Data Sets to z/OS

The XMIT files provided from Nastel Technologies can be uploaded to the z/OS operating system using FTP. If you would like to pre-allocate the datasets on z/OS before using FTP, create the files using the attributes shown in the [Table 3-1](#).

It is not necessary to pre-allocate the target datasets on z/OS if you use the `QUOTE SITE` command with FTP. Ensure your source and target directories are correct.

For example:

```
ftp <host>
Enter: user <id>
Enter: password <*****>
Enter: bin
Enter: quote site lrecl=80 recfm=fb blksize=3120 primary=10 blocks
secondary=5 blocks put JCL.XMI
Enter: quote site lrecl=80 recfm=fb blksize=3120 primary=950 blocks
secondary=25 blocks put LOAD.XMI
Enter: quote site lrecl=80 recfm=fb blksize=3120 primary=315 blocks
secondary=87 blocks put SAMP.XMI
```

The required file allocations on the mainframe are listed in the table below.

	<b>DSORG</b>	<b>RECFM</b>	<b>LRECL</b>	<b>BLKSIZE</b>	<b>Blks</b>
<b>JCL.XMI</b>	PS	FB	80	3120	10
<b>LOAD.XMI</b>	PS	FB	80	3120	950
<b>SAMP.XMI</b>	PS	FB	80	3120	30

JCL.XMI represents the name of the file on the mainframe. It could be USERID.JCL.XMI where USERID is your TSO logon ID. The same applies for the other two files: LOAD and SAMP. These files can be allocated using 3.2 in Interactive System Productivity Facility (ISPF) if you use the pre-allocation method. These are temporary files and may be deleted once the installation is successful.

## 3.2 Restoring Files

Once transferred to the mainframe these files must be received into PDS files. The RECEIVE command will extract the files and dynamically create the proper space when used as follows. HLQ represents the high-level qualifier for each dataset. ZXP is the middle-level qualifier. These are the names that are to be substituted in Job Control Language (JCL) streams. The block sizes for the FB files may be changed to conform to site standards. The load library should remain the same as in [Table 3-2](#).

```
Receive indsn(JCL.XMI)
```

The response to the prompt is: dsn('HLQ.ZXP.JCL')

```
Receive indsn(LOAD.XMI)
```

The response to the prompt is: dsn('HLQ.ZXP.LOAD')

```
Receive indsn(SAMP.XMI)
```

The response to the prompt is: dsn('HLQ.ZXP.SAMP')

The following table shows the dataset attributes that will be created when they are received. The space may vary at different installations.

Table 3-2. Minimum z/OS File Allocations					
	DSORG	RECFM	LRECL	BLKSIZE	BLKS
<b>HLQ.ZXP.JCL</b>	PO	FB	80	8000	4
<b>HLQ.ZXP.LOAD</b>	PO	U	0	27998	76
<b>HLQ.ZXP.SAMP</b>	PO	FB	320	27840	6

If you are planning to copy the load modules in HLQ.ZXP.LOAD to another runtime dataset, please make sure that the target dataset is a PDS and not a PDSE(LIBRARY).

There are now three installed target libraries:

- HLQ.ZXP.JCL: This library contains JCL for the zExpert Agent started tasks. The library also contains JCL for the JOBS that can be used to configure and verify the installation.
- HLQ.ZXP.LOAD: This library contains the load modules for the zExpert Agent started tasks. It contains the agents used to support data collection within IBM MQ, DB2, and CICS. Also, the modules for the jobs used to verify the installation reside in this library.
- HLQ.ZXP.SAMP: This library contains the sample members to configure the zExpert Agent started tasks. Additionally, this library contains sample members for the specific step installation process. Members are included that contain CICS definitions.

## 3.3 Installing zExpert Agent

Sample member \$INST in ZXP.JCL provides a README snapshot of the steps involved in installing the Nastel zExpert Agent support.

### 3.3.1 Authorized Program Facility Authorization

The Nastel load library HLQ.ZXP.LOAD must be APF (Authorized Program Facility) authorized. Add the following statement(s) to the appropriate PROG member in PARMLIB:

```
APF ADD DSNAME(HLQ.ZXP.LOAD) VOLUME(volser)
```

Determine the volumes on which the load libraries above resided on and use these volumes on their respective APF ADD statements shown above.

## 3.3.2 Tailoring JCL

Before submitting the sample JCL, configuration is required. Refer to [section 3.3.3, Configuring Nastel zExpert Agent \(NZA\)](#).

### 3.3.2.1 zExpert Agent JCL

The member NSNZAAG is shown below.

```
// NSNZAAG  PROC NZA=++nza++,TRACE=
//*****
//*
//*  Nastel zExpert Agent started task
//*
//*  ++nza++   - Nastel high level qualifier
//*  ++cee++   - Language Environment(LE) high level qualifier
//*  ++wmq++   - WebSphere MQ high level qualifier
//*  ++dfh++   - CICS TS high level qualifier
//*
//*  NZA's Target data Consumer:
//*  Square brackets [ ] denote optional parameters
//*  [-SysLogD] = Target data consumer is SysLogD (RFC 5424),
//*               default: AutoPilot M6
//*
//*  zExpert Agent's TRACE options:
//*  Square brackets [ ] denote optional parameters
//*
//*  [-tnza]    = Enable zExpert Agent core internal tracing, default: off
//*  [-txp]    = Enable zExpert Data Manager internal tracing,
//*               default: off
//*  [-tcs]    = Enable zExpert Console Manager internal tracing,
//*               default: off
//*
//*  ex: TRACE='-tnza -txp'
//*
//*
//*  The following PARM options is for TransactionWorks z/OS Probe.
//*
//*  PARM options:
//*  Square brackets [ ] denote optional parameters
//*  [-c<n>[ ] = Allocate <n> MTF tasks, default: 10
//*  [-m<QM*>] = Queue Manager mask, default: *
//*  [-l<Listener>]
//*               = Listener port for control commands, default: 6002
//*  [-r<n>]    = Reconnect interval in seconds, default: 60
//*  [-T<n>]    = Number of reading threads per qmgr, default: 1
//*  [-D<n>]    = Max. message data size to read in KB, default: 4
//*  [-B ]      = Disable batching of messages
//*  [+B<Batch_Size>]
//*               = Enable batching with maximum API exit messages
//*                   per batch under syncpoint, default: 10
//*  [-P]      = Skip publishing of fact messages to TA
//*                   (for testing when TA not available), default: off
//*  [-t]      = Enable internal tracing, default: off.
//*  [-tm]     = Enable message tracing, default: off.
```

```

/*          To trace API exit messages, both -t and -tm must be enab
/* [ -debug] = Enable detail debug, default: off.
/*
/******
//RUN      EXEC PGM=NSNZAINI,REGION=0M,TIME=1440,
//          PARM='/&TRACE'
/*          PARM='/-mCSQ7 -c1 -i &TRACE -SysLogD'
//STEPLIB DD DSN=&NZA..LOAD,DISP=SHR
//          DD DSN=++wmq++..SCSQAUTH,DISP=SHR
//          DD DSN=++wmq++..SCSQANLE,DISP=SHR
//          DD DSN=++wmq++..SCSQLOAD,DISP=SHR
//          DD DSN=++dfh++..SDFHEXCI,DISP=SHR
//          DD DSN=++cee++..SCEERUN2,DISP=SHR
//NZACFG   DD DSN=&NZA..SAMP,DISP=SHR
/*-----
/* Uncomment the 3 DD statements below to run Nastel's
/* TransactionWorks z/OS Probe (NSQTACON & NSQTI) with NZA
/*-----
/*EDCMTF   DD DSN=&NZA..LOAD,DISP=SHR
/*MQSINI   DD DSN=&NZA..SAMP(TAMQSINI),DISP=SHR
/*NSQMQRB DD DSN=&NZA..SAMP(NSQMQRB),DISP=SHR
/*-----
//SYSPRINT DD SYSOUT=*
//NASTID99 DD DUMMY
//SYSOUT   DD SYSOUT=*
//SYSERR   DD SYSOUT=*
//CEEDUMP  DD SYSOUT=*
//CEEMSG   DD SYSOUT=*
//CEEOUT   DD SYSOUT=*
//CEESNAP  DD SYSOUT=*
//CEEDUMP  DD SYSOUT=*

```

The NASTID99 Dummy JCL statement is used to prevent any intercepted messages generated from the MQGET calls from getting sent to the API Interceptor. The 99 is used as a unique identifier and is a sample in this JCL. The 99 can be changed to any value that is desired, but it should not be 00.

The SYSTCPD ddname explicitly identifies which TCPIP dataset is used to obtain the parameters defined by the TCPIP stack running when no GLOBALTCPIPDATA statement is configured. This ddname is optional, but is recommended.

### 3.3.3 Configuring Nastel zExpert Agent (NZA)

This section provides the information necessary to configure the Nastel zExpert Agent tasks.

#### 3.3.3.1 Message Prefix

Nastel zExpert uses the string “NZA” as the message prefix on the z/OS platform.

#### 3.3.3.2 NZA Initialization File (NZAINI00)

The file is read-only and is not modified by the NZA products address space.

##### **NZAID=xxxx**

The unique identification (4 alphanumeric chars) assigned to each NZA address space.

##### **XP=xx/NO**

zExpert’s Nodes configuration member name suffix (2 alphanumeric characters). The default value is 00. The configuration member XPCONFxx must be located in the PDS pointed by NZACFG DD card.

##### **CS=xx/NO**

Nastel’s z/OS Console Interface configuration member name suffix (2 alphanumeric characters). The default value is 00. The configuration member CSCONFxx must be located in the PDS pointed by NZACFG DD card.

##### **TA=xx/NO (optional)**

Nastel’s TransactionWorks z/OS TACON configuration member name suffix (2 alphanumeric characters). The default value is NO (disable TACON). Use this parameter to run TACON in zExpert’s address space. The configuration member TACONFxx must be located in the PDS pointed by NZACFG DD card.

##### **TI=xx/NO (optional)**

Nastel’s TransactionWorks API Interceptor configuration member name suffix (2 alphanumeric characters). The default value is NO (disable API Interceptor). Use this parameter to run API Interceptor in zExpert address space. The configuration member TICONFxx must be located in the PDS pointed by NZACFG DD card.

##### **ZXPCOL=xx**

zExpert’s Data Collectors configuration member name suffix (2 alphanumeric characters). The default value is 00. The configuration member ZXPCOLxx must be located in the PDS pointed by NZACFG DD card.

##### **DISCINTV=nnn**

zExpert’s resource managers discovery interval (in seconds). The default value is 60 seconds.

##### **MQPRB=xx (optional)**

Nastel’s TransactionWorks parsing options member name suffix (2 alphanumeric characters). The default value is 00. The parsing options member MQPRBxx must be located in the PDS pointed by NZACFG DD card.

**TGTINC=xxx,yy,zzzz**

zExpert's resource manager job names include list. z/OS related data such as Real Storage and CPU Time will be collected. All names are generic. If this parameter is omitted, zExpert Data Collector will collect statistics data for all active jobs in the system; the equivalent of specifying "TGTINC=\*".

Following is a sample initialization file:

```
*-----
#
#   Nastel products initialization parameters
#
NZAID=NZA1           NZA address space Id
#XP=00              NO | xx the suffix of XPCONFxx member
#CS=00              NO | xx the suffix of CSCONFxx member
#TA=NO              NO | xx the suffix of TACONFxx member
#TI=NO              NO | xx the suffix of TICONFxx member
#ZXPCOL=00          The suffix of ZXPCOLxx member
#DISCINTV=60        Discovery Interval (in seconds)
#MQPRB=00           The suffix of MQPRBxx member
#TGTINC=CSQ, DB, CICS
```

**3.3.3.3 XPCONFxx**

The XPCONFxx member of the PDS pointed to by the NZACFG DD defines the communication connections on which the zExpert collectors are to send the data they collect. Multiple connections can be defined, each known as an Expert ID.

**EXPERT::ID=xxxx**

Defines a four-character Expert ID to be associated with the connection information which follows.

**xxxx::Node=yyyyyyyy**

yyyyyyyy defines the Node Name or IP address (IPV4) associated with Expert ID xxxx to which collected data will be sent to the consumer. The consumer must be an instance of AutoPilot M6 or SysLogD (RFC 5424) consumer.

**xxxx::Port=nnnnn**

nnnnn defines the Port Number associated with Expert ID xxxx to which collected data will be sent to the consumer.

**xxxx::Protocol=xxx**

xxx defines the protocol to be used when sending data to the connection defined by Expert ID xxxx.

Valid values are:

- UDP
- TCP

### 3.3.3.4 CSCONFxx

CSCONFxx member is used to specify Nastel's z/OS Console Interface runtime configuration. The file is read-only and is not modified by NZA or Console Interface.

#### **SYSLOG=YES/NO**

Specify whether to enable Nastel's syslog listener exit. If YES is specified, the SYSLOG listener exit will intercept all messages sent to z/OS console by the included resource managers (IBM MQ, DB2, CICS/TS). The default value is NO.

#### **MSGFILTER=xx/NO**

Specify the console messages filter member suffix (2 alphanumeric chars). The default value is NO (No message filtering). Use the message filter member CSMSGFxx to include the messages you wanted to intercept when they are issued. The CSMSGFxx member must be located in the PDS pointed by the NZACFG DD card.

#### **EXPERTID=xxxx**

Specify zExpert Id where the intercepted messages should be sent. The specified EXPERTID value must match one of the EXPERT ID defined in the XPCONFxx member.

#### **MSGTRACE=NO/YES**

Enable z/OS SYSLOG messages tracing. The default value is NO. Do not turn on the messages tracing unless it's requested by Nastel customer support. The trace data will be written to the NSMSGHDL sysout file if YES is specified.

#### **CMDTRACE=NO/YES**

Enable zExpert commands tracing. The default value is NO. Do not turn on the commands tracing unless it's requested by Nastel customer support. The trace data will be written to NSCMDHDL sysout file if YES is specified.

#### **CMDPORT=nnnnn**

The listening port number used by zExpert to receive incoming requests from external client. The default value is 7010.

The following is a sample CSCONF00:

```
*-----
SYSLOG=YES                NO | YES SYSLOG Messages capture
#MSGFILTER=00            NO | xx  The suffix of CSMSGFxx member
#EXPERTID=EXP1          XXXX | Expert Id (defined in XPCONFxx)
#MSGTRACE=NO            NO | YES Trace SYSLOG Messages handler
#CMDTRACE=NO            NO | YES Trace Command handler
#CMDPORT=7010           Command Server's listener port number
```

### 3.3.3.5 ZXPCOLxx

This member is used to configure zExpert's Data Collectors. The ZXPCOL00 member in HLQ.ZXP.SAMP dataset contains the default Data Collector definitions for all resource manager types (IBM MQ, CICS, DB2, ZOS). Specific Data Collector definitions member for each type of resource manager are also available in HLQ.ZXP.SAMP: ZXPCOLMQ, ZXPCOLCI, and ZXPCOLD2.

Each Data Collector definition starts with <req\_ent> tag and ends with </req\_ent> tag.

<req\_cmd> tag contains the Data Collector name. (Refer to [Appendix A.5](#) for list of Data Collectors.)

```
ex: <req_cmd>getCICStats</req_cmd>
```

`<req_cmd_parm>` tag contains the data requested.

ex: `<req_cmd_parm>STORAGE</req_cmd_parm>`

`<req_resmgr>` tag contains the resource manager name where the data will be collected. Generic name is supported. Specify \* to select all resource managers of a same type or specify CICST to select all resource managers with the started task name beginning with CICST.

ex: `<req_resmgr>CICST</req_resmgr>`

`<req_resmgr_type>` tag contains the resource manager type. Valid resource manager type is IBM MQ, CICS, DB2, ZOS, JES.

ex: `<req_resmgr_type>CICS</req_resmgr_type>`

`<req_expert_id>` tag contains the EXPERT ID where the collected data will be sent. The specified value should match one of the EXPERT ID defined in XPCONFxx member.

ex: `<req_expert_id>EXP1</req_expert_id>`

`<req_intval>` tag contains the data collection interval (hh:mm:ss). The default value is 1 minute.

ex: `<req_intval>00:01:00</req_intval>`

`<req_trace>` tag contains the data collector debug trace option. Valid debug trace option is ON or OFF. The default value is OFF.

ex: `<req_trace>OFF</req_trace>`

### JES2 Spool File Log Collection

Collects various spool files from the JES Spool. Code samples are presented below. Please note that `<req_resmgr>` is always specified as JES2 and `<req_resmgr_type>` is always specified as JES. `<req_intval>` represents the EOD Retry.

- `sysid.syslog.system` identifies the MVS syslog to zExpert. Modify the `sysid` variable to match the `sysid` of the system whose syslog you wish to collect.

```
<req_ent>
<req_cmd>getJESSpool</req_cmd>
<req_cmd_parm>sysid.Syslog</req_cmd_parm>
<req_resmgr>JES2</req_resmgr>
<req_resmgr_type>JES</req_resmgr_type>
<req_expert_id>EXP1</req_expert_id>
<req_intval>00:00:15</req_intval>
<req_trace>OFF</req_trace>
</req_ent>
```

- *jobname.ddname* represents a particular SYSOUT generated by a particular job to be collected. *jobname* represents the job and *ddname* represents the specific sysout.

```
<req_ent>
<req_cmd>getJESSpool</req_cmd>
<req_cmd_parm>jobname.ddname</req_cmd_parm>
<req_resmgr>JES2</req_resmgr>
<req_resmgr_type>JES</req_resmgr_type>
<req_expert_id>EXP1</req_expert_id>
<req_intval>00:00:15</req_intval>
<req_trace>OFF</req_trace>
</req_ent>
```

The following is a sample ZXPCOLCI:

```
<req_ent>
< req_cmd>getCICStats</req_cmd>
<req_cmd_parm>STORAGE</req_cmd_parm>
<req_resmgr>*</req_resmgr>
<req_resmgr_type>CICS</req_resmgr_type>
<req_expert_id>EXP1</req_expert_id>
<req_intval>00:01:00</req_intval>
<req_trace>OFF</req_trace>
</req_ent>
<req_ent>
<req_cmd>getCICStats</req_cmd>
<req_cmd_parm>MQCONN</req_cmd_parm>
<req_resmgr>*</req_resmgr>
<req_resmgr_type>CICS</req_resmgr_type>
<req_expert_id>EXP1</req_expert_id>
<req_intval>00:01:00</req_intval>
<req_trace>OFF</req_trace>
</req_ent>
<req_ent>
<req_cmd>getCICStats</req_cmd>
<req_cmd_parm>DB2CONN</req_cmd_parm>
<req_resmgr>*</req_resmgr>
<req_resmgr_type>CICS</req_resmgr_type>
<req_expert_id>EXP1</req_expert_id>
<req_intval>00:01:00</req_intval>
<req_trace>OFF</req_trace>
</req_ent>
```

### 3.3.3.6 CSMMSGFxx

This member is used to configure zExpert's Console Message filters. The CSMMSGF00 member in HLQ.ZXP.SAMP dataset contains the default Console Message filters definitions for all resource manager types (IBM MQ, CICS, DB2, ZOS).

**MSGINC=xxxx,zzzzzzzz**

Contains the list of message ids to be intercepted and sent to zExpert Node. All entries are treated as being generic for compare purposes. A maximum of 8 characters can be specified. Repeat MSGINC parameter to add more message IDs.

ex: MSGINC=DFH,CSQX213E,CSQX599E

MSGINC=DSN

### 3.3.4 Running Multiple NZAs

More than one NZA may run on the same z/OS operating system. Each NZA is identified with a unique NZAID. Use NZAINIxx member to configure your NZA regions.

### 3.3.5 External Security Definitions

Verify that your security definitions for RACF or OEM software vendor allow the following access:

- The NZA tasks must be able to execute from the load libraries using STEPLIB or from the link list.
- The NZA tasks require read access to the dataset pointed by NZACFG DD card.

# Chapter 4: Installing CICS Data Collector

## 4.1 CICS Definitions

The following definitions are required for the CICS installation.

You may use the CEDA transaction (RDO) or the DFHCSDUP utility to create a NASTEL group to contain the following CICS definitions. You may name the group to your own naming standards.

```
DEFINE TRANS(NSMI) PROGRAM(DFHMIRS) TASKDATAKEY(CICS)
TASKDATALOC(ANY) GROUP(nastel_group)
```

```
DEFINE PROG(NSTEXCI) DATALOCATION(ANY) EXECKEY(CICS) GROUP(nastel_group)
CONCURRENCY(THREADSAFE)
```

```
ADD GROUP(nastel_group) LIST(cics_list)
```

Install the group into your CICS LIST. You may use the sample member NASTDEFS in ZXP.SAMP provided to install the Nastel CICS definitions.

zExpert for CICS also requires IRCSTRT=YES and IRC=YES to be specified in the CICS System Initialization Table (SIT) or equivalent. A copy of the CICS supplied DFH\$EXCI Group also needs to be added to your active CICS List and then installed (See the CEDA Transaction). The default values as supplied by IBM are sufficient. We are using the External CICS Interface (EXCI) to link to the CICS server program NSTEXCI via the CICS Connection Netname BATCHCLI. See CICS TS for z/OS: Using EXCI, [Chapter 3 - Configuring EXCI, Setting up EXCI for static routing](#), for further details.

## 4.2 CICS Security

The target CICS server region performs link security checking against requests from our zExpert client program.

These security checks cover transaction attach security (when attaching the mirror transaction), and resource and command security checking within our server application program NSTEXCI. The link user ID that CICS uses for these security checks will be NZA's user ID.

To ensure these link security checks do not cause security failures, you must ensure that NZA user ID is authorized to the following resource profiles, as appropriate:

- The profile for the mirror transaction, either CSMI for the default, or the mirror transaction specified on the *transid* parameter NSMI. This is required for transaction attach security checking.
- The profiles for all the resources accessed by the CICS server application program – files, queues (transient data and temporary storage), programs, and so on. This is required for resource security checking.
- The CICS command profiles for the SPI commands issued by the CICS server application program INQUIRE, SET, DISCARD, and so on. This is required for command security checking.

## 4.3 Verifying CICS Installation

To verify CICS installation of NSMI transaction and program NSTEXEC, submit member NSMIIVP from ZXP.JCL. Member NSMIIVP does require JCL updates to conform to your installation site requirements.

Tailor the member NSMIIVP in the JCL library.

```
//NSMIIPV  JOBCARD,USER=UserID
/*-----
/* Installation Verification Program (IVP) for CICS Transaction NSMI
/* and Program NSTEXCI
/*
/* ++nza++   - Nastel high level qualifier
/* ++dfh++   - CICS TS high level qualifier
/*
/*
/* The following JCL PARM options are for NSMIIVP.
/*
/* PARM options:
/* PARM 1 = Target CICS system, required
/*           Ex: CICSTS41
/*
/* Notes: Please supply USER=xxxxxxx on the JOBCARD where
/*           xxxxxxxx represents the UserID assigned to NSNZA address
/*           space. This UserID will need to pass your CICS Link
/*           Security requirements. Please consult your CICS Security
/*           Representative. CICS Transaction NSMI and program NSTEXCI
/*           issue SPI commands such as INQUIRE and so on.
/*
/*-----
//NSMIIVP  EXEC PGM=NSMIIVP,REGION=0M,
//          PARM='parm-1'
//STEPLIB DD DSN=++nza++..LOAD,DISP=SHR
//          DD DSN=++dfh++..SDFHEXCI,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSOUT   DD SYSOUT=*
/*
```

Ensure a valid JOB card is available at the beginning of the JCL stream.

++nza++ represents the high and middle level qualifier nodes assigned to Nastel product LOAD library by your installation representative. ++dfh++ represents the high and middle level qualifier nodes that make up your CICS SDFHEXCI library containing External CICS Interface support.

Expect the following SYSPRINT output, where xxxxxxxx represents the CICS region name:

```
*===== EXCI Sample Batch Client Program =====*
*
*   Parameters: APPLID=xxxxxxx
*
* EXEC Level Processor.
*   Setting up the EXEC level call.
*   The Link Request has successfully completed.
*   Server Response: 0048000A
*
*===== End of EXCI Sample Batch Client Program =====*
```

Expect the following WTO messages on your console. In the following example 0000167 represents the TASK number of NSMI Transaction.

```
+NSTEXCI - NSMI 0000167 ENTRY
+NSTEXCI - NSMI 0000167 COMMAREA BUFFER SIZE 00007EF4
+NSTEXCI - NSMI 0000167 PROCESS CTYPE 0001
+NSTEXCI - NSMI 0000167 COLLECT STATISTICS
+NSTEXCI - NSMI 0000167 FUNCTION TRANSACTIO FOUND
+NSTEXCI - NSMI 0000167 STID 000A STILEN 0048 WILL BE COPIED
+NSTEXCI - NSMI 0000167 RETURN TO EXCI CLIENT
```

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# Chapter 5: Installing zExpert Plug-in

## 5.1 AutoPilot M6 Install

AutoPilot M6 is a prerequisite for installing zExpert Plug-in. Before installing the zExpert Plug-in, you must first install AutoPilot M6 on your Windows or UNIX machine. The AutoPilot M6 component consists of three processes:

- Domain Server
- CEP Server
- Web Console Services.

For detailed installation information, refer to the *AutoPilot M6 Installation Guide*.

AutoPilot M6 can forward facts received from a zExpert Agent to a SyslogD (RFC 5424) consumer. Highlight the zExpert Policy Manager, right click and select Properties, then choose the Streaming Tab. Enter the network location of the server under Location and select the Stream Facts check box. (The TNT4J Streaming Framework is required.) Alternatively, the zExpert Agent can stream facts directly to a SysLogD consumer by including the “-SysLogD” keyword in the PARM= value passed via the JCL, and setting the NODE and PORT values to point to a SysLogD Consumer.

## 5.2 zExpert Plug-in Install

Download zExpert Plug-in package file from Nastel Technologies Resource Center.

To install the Package Files:

1. Stop all AutoPilot M6 services via *Windows Services* by accessing *Services* through the Windows Control Panel/Administrative Tools/Services. Stop all three services by highlighting each one, right clicking on it, and then selecting *Stop*.
2. Go to the DOS prompt and navigate to your AutoPilot M6\bin directory. For example:  
C:\nastel\autopilotm6\bin
3. Start the package manager with the command **PKGMAN -GUI** to display the following screen.

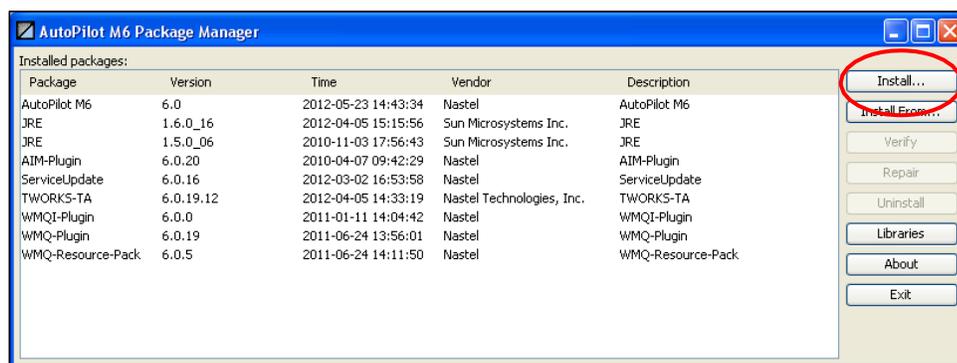


Figure 5-1. Installing zExpert Plug-in

4. Click **Install** and select the zExpert’s *pkg* file from the location you saved them.
5. Restart all AutoPilot M6 services via *Windows Services* by accessing *Services* through the Windows Control Panel/Administrative Tools/Services. Start all three services by highlighting each one, right clicking them, and then selecting *Start*.

## 5.3 zExpert Process Wrapper Configuration

To configure zExpert's Process Wrapper:

1. Log on into AutoPilot M6 Enterprise Manager.
2. Select the **Deployment Tool** icon at top left of screen.
3. Click your *Group Name*, and then **ZOS**. Your z/OS default experts will be displayed.

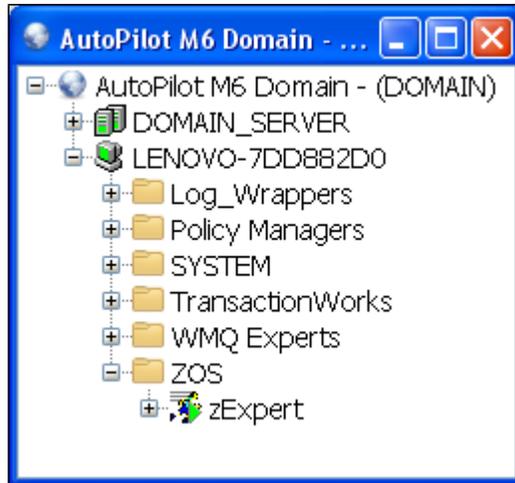


Figure 5-2. Configure zExpert Process Wrapper

4. Right-click **zExpert** expert and select *Properties*.

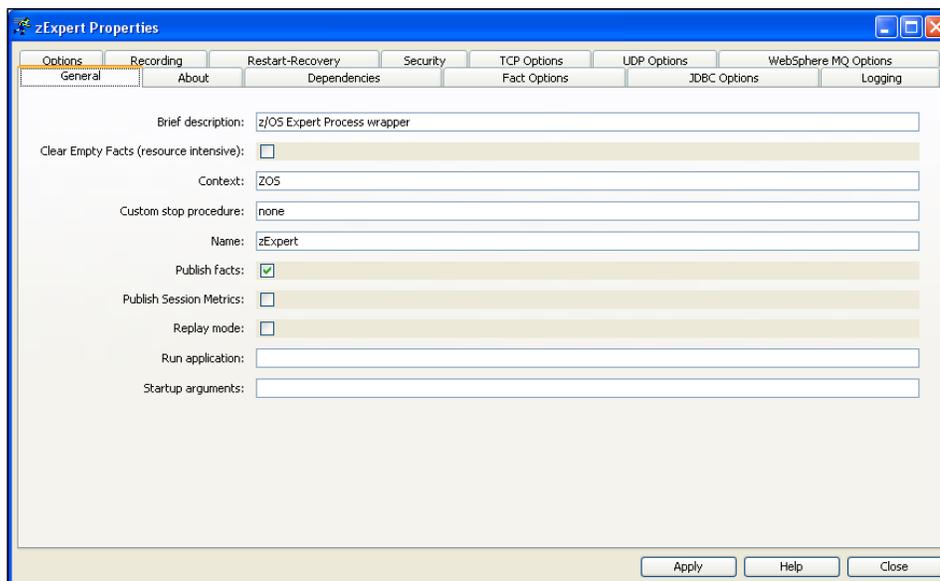


Figure 5-3. zExpert Properties – General

5. Manually change zExpert Process Wrapper's properties to adapt to your environment.
6. Click **Apply** to save your changes.

7. To view your default Business Views:
  - a. Expand the **Policy Managers** folder under Group Name.
  - b. Expand **Workgroup Policy Manager**.
  - c. Expand **Policies**. zExpert's default Business views are:
    - zOS\_CICS\_Policy**
    - zOS\_DB2\_Policy**
    - zOS\_WMQ\_Policy**.

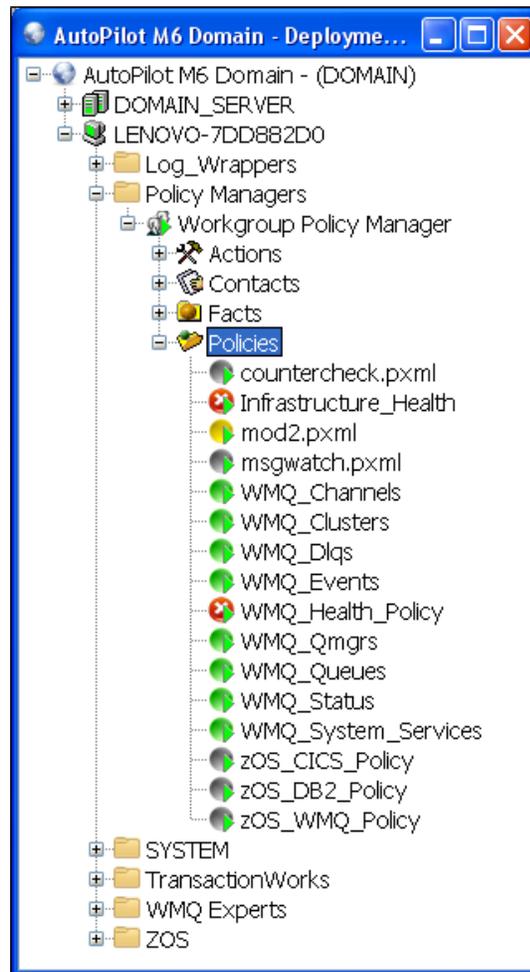


Figure 5-4. zExpert Business Views

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## Chapter 6: Diagnostic Messages

Diagnostic messages are produced by all of the subtasks in the transaction monitor. The messages are written to JESMSGLG using the following format:

```
(originating task) (message number) (message text)
```

If the messages are written to a SYSOUT file, they have the following format:

```
(date) (time) (originating task) (message number) (message text)
```

The originating task can be, for example, MAIN or XMIT0001.

The message number has the following format:

```
(message prefix) (message number) (message type)
```

The message prefix default is NZA. It can be changed by coding a PARM= parameter in the EXEC card of the Started Task (STC) Job Control Language (JCL). Choose from one to four characters. Message numbers are four digits and begin at 1000. The message types are:

- I** – Information
- W** – Warning
- E** – Error
- S** – Severe
- T** – Trace

The messages are shown as they would appear in a SYSOUT file without the date and time fields but with the default message prefix.

All numeric values in the diagnostic messages are in hexadecimal unless otherwise specified.

	<b>NOTES:</b>	<ol style="list-style-type: none"> <li>1. When error messages are received, refer to IBM's manual SA22-7609 for error codes and further instructions. If you are unable to resolve the error using the prescribed instructions in the IBM documentation, contact Nastel Support for further assistance.</li> <li>2. If you contact Nastel Support, ensure you have all the required information about your configuration and environment available.</li> </ol>
---	---------------	--

## zExpert Agent Messages (1500-1999)

**NZA1501E** zExpert Agent Anchor allocate failed.

**Explanation:** The main task was unable to allocate the required storage. This message occurs when zExpert Agent allocating his anchor block during initialization.

**System Action:** zExpert Agent comes down.

**Operator Response:** Restart zExpert Agent with a bigger region size. If the problem can't be fixed on-site, contact Nastel support and supply them with this error message.

**NZA1502E** NameToken(NSNZATOKENxxxx) create failed rc(nnnn).

**Explanation:** The main task was unable to create the required NameToken. This message occurs when zExpert Agent creating his NameToken during initialization.

Where: xxxx is the ASID of zExpert Agent region and nnnn is Create NameToken return code.

**System Action:** zExpert Agent comes down.

**Operator Response:** Contact Nastel support and supply them with this error message.

**NZA1503E** Fatal error while initializing XXXX subtask, ATTACH RC(nnnn).

**Explanation:** The main task was unable to attach the required subtask. This message occurs when zExpert Agent attach his subtasks during initialization.

Where: XXXX is the subtask name and nnnn is ATTACH return code.

**System Action:** zExpert Agent comes down.

**Operator Response:** Contact Nastel support and supply them with this error message.

**NZA1505E** CS Agent Anchor allocate failed.

**Explanation:** The Console Manager subtask was unable to allocate the required storage. This message occurs when zExpert's Console Manager allocating his anchor block during initialization.

**System Action:** zExpert Agent comes down.

**Operator Response:** Restart zExpert Agent with a bigger region size. If the problem can't be fixed on-site, contact Nastel support and supply them with this error message.

**NZA1508E** SYSLOG messages interception failed. RC(nnnn)

**Explanation:** The Console Manager subtask was unable to activate his SYSLOG exit. This message occurs when zExpert's Console Manager activating his SYSLOG exit during initialization.

**System Action:** zExpert SYSLOG messages interception is disabled.

**Operator Response:** Contact Nastel support and supply them with this error message.

**NZA1520E** XXXX subtask ATTACH failed, rc(nnnn).

**Explanation:** The main task was unable to attach the required subtask. This message occurs when zExpert Agent attach his subtasks during initialization.

Where: XXXX is the subtask name and nnnn is ATTACH return code.

**System Action:** zExpert Agent comes down.

**Operator Response:** Contact Nastel support and supply them with this error message

# Chapter 7: Performance Metrics

The zExpert collects performance metrics to create business views that monitor specific situations:

- IBM MQ ([section 7.1](#))
- DB2 ([section 7.2](#))
- CICS ([section 7.3](#))
- z/OS ([section 7.4](#))

## 7.1 IBM MQ

You can use z/OS IBM MQ performance metrics collected by zExpert agent to create business views that monitor specific situations in your z/OS IBM MQ environment. zExpert agent provided the following performance metrics for z/OS IBM MQ:

- IBM MQ Buffer Manager Performance Statistics ([section 7.1.1](#))
- IBM MQ Coupling Facility Manager Performance Statistics ([section 7.1.2](#))
- IBM MQ DB2 Manager Performance Statistics ([section 7.1.3](#))
- IBM MQ Data Manager Statistics ([section 7.1.4](#))
- IBM MQ Log Manager Statistics ([section 7.1.5](#))
- IBM MQ Lock Manager Statistics ([section 7.1.6](#))
- IBM MQ Message Manager Statistics ([section 7.1.7](#))
- IBM MQ Storage Manager Statistics ([section 7.1.8](#))
- IBM MQ Topic Manager Statistics ([section 7.1.9](#))
- IBM MQ Page Sets Statistics ([section 7.1.10](#))

### 7.1.1 MQ Buffer Manager Statistics

Buffer Manager manages the buffer pools in virtual storage, the writing of pages to page sets as the buffer pools become full, and the reading of pages from page sets. Buffer Manager's performance metrics can be used to detect problems within buffer pools. For example, you can create a business view to monitor buffer pool usage and issues a critical alert when low buffer availability is detected within a pool. Buffer Manager's performance metrics are listed in Table 7-1 and out-of-the-box business views are listed in Table 7-2.

<b>Metric Name</b>	<b>Description</b>	<b>Origin</b>
ALLOCATEDBUFFERS	Allocated buffers in pool	qpstnbuf
AVAILABLEBUFFERS	Available buffers in pool	qpstcbs
PCTAVAILABLEBUFFERS	Percent available buffers in pool	100*(qpstcbs/qpstnbuf)
LOWESTAVAILABLEBUFFERS	Lowest number of available buffers	qpstcbsl
NOBUFFERS	Number of times suspended for no available buffers	qpstsos
DASDREAD	Number of DASD reads	qpstrio
DASDREADSEC	Number of DASD reads per second	qpstrio/300
DASDWRITE	Number of DASD writes	qpstwio
DASDWRITESEC	Number of DASD writes per second	qpstwio/300
SYNCHWRITES	Number of synchronous writes	qpstimw

Metric Name	Description	Origin
ASYNCHWRITES	Number of times deferred write threshold is reached	qpstdwt
SYNCHWRITESTHRESHOLD	Number of times synchronous write threshold is reached	qpstdmc
GETPOLDREQUESTS	Number of GETP (old) requests	qpstgetp
GETPNEWREQUESTS	Number of GETP (new) requests	qpstgetn
BUFFERSTEALS	Number of buffer steals	qpststl

**Table 7-2. Buffer Management Out-of-the-box Business Views**

Business View Name	Description	Metric(s) Used
BP No Buffers Available Monitor	Monitor the number of times the Queue Manager is suspended for no available buffers (QPSTSOS).	NOBUFFERS
BP Read In From Disk Monitor	Monitors the number of pages read in from disk (QPSTRIO). The value should be zero for buffer pools for short lived messages.	DASDREAD
BP Written Immed To Disk Monitor	Monitors the number of pages written immediately to disk (QPSTIMW). The value should be close to zero per hour.	SYNCHWRITES
BP Buffers Availability Monitor	Monitor percent available buffers (QPSTCBS*100/QPSTNBUF) and issues a warning (15% & >5%) or critical (5%) alert when detect low buffer availability within a pool.	PCTAVAILABLEBUFFERS

## 7.1.2 IBM MQ Coupling Facility Manager Performance Statistics

Coupling Facility Manager manages the interface with the Coupling Facility on z/OS. Coupling Facility's performance metrics can be used to detect problems in Coupling Facility application structures and QSG administration structure. For example, you can create a business view to monitor the number of structure full and issues a critical alert when the number is high. Coupling Facility Manager's performance metrics are listed in Table 7-3 and out-of-the-box business views are listed in Table 7-4.

**Table 7-3. Coupling Facility Manager Performance Metrics**

Metric Name	Description	Origin
STRUCTNUMBER	Structure number	qeststrn
STRUCTFULLS	Number of structure fulls	qestsful
SINGLEREQS	Number of Single Requests (IXLLSTE)	qestcsec
SINGLEREQAVGTIME	Avg Single Requests Time	(qestsstc/4096)/qestcsec
SINGLEREQRETRIES	Number of Single request retries	qestrsec
MULTIREQS	Number Multiple requests (IXLLSTM)	qestcmec
MULTIREQAVGTIME	Avg Multiple Requests Time	(qestmstc/4096)/qestcmec
MULTIREQRETRIES	Number of Multiple request retries	qestrmec

MAXUSEDENTRIES	Max number of Entries in use	qestmnus
MAXUSEDELEMENTS	Max number of Elements in use	Qestmlus

**Table 7-4. Coupling Facility Manager Out-of-the-box Business Views**

<b>Business View Name</b>	<b>Description</b>	<b>Metric(s) Used</b>
CF Structure Fulls Monitor	Monitor the number of structure fulls (QESTSFUL). If this number is greater than zero you need to determine if this is due to a transient problem or due to an increasing trend. You may want to increase the size of the structure. If this value is non zero, you will have got Z/OS console messages indicating capacity problems with the structure which you should act on.	STRUCTFULLS
CF Max Used Entries Monitor	Monitors the max number of entries in use (QESTMNUS) and issues an alert if there is an upward trend and it is reaching the structure maximum entries.	MAXUSEDENTRIES
CF Max Used Elements Monitor	Monitors the max number of elements in use (QESTMLUS) and issues an alert if there is an upward trend and it is reaching the structure maximum elements.	MAXUSEDELEMENTS
CF Single Reqs RspTime Monitor	Monitor the average response time for single requests (QESTSSTC/QESTCSEC).	SINGLEREQAVGTIME
CF Multi Reqs RspTime Monitor	Monitor the average response time for multiple requests (QESTMSTC/QESTCMEC).	MULTIREQAVGTIME

### 7.1.3 IBM MQ DB2 Manager Performance Statistics

DB2 Manager manages the interface with the DB2 database that is used as the shared repository for Queue Sharing Group (QSG). DB2 Manager's performance metrics can be used to detect QSG's connection problems to the DB2 subsystem and monitor its SQL activities. For example, you can create a business view to monitor the Queue Manager connection to the DB2 subsystem and issues a critical alert if the connection fails. DB Manager's performance metrics are listed in Table 7-5.

Table 7-5. DB Manager Performance Metrics		
Metric Name	Description	Origin
SERVERTASKS	Number of server tasks	numtask
ACTIVETASKS	Number of active server tasks	acttask
CONNECTS	Number of Connect requests	connct
DISCONNECTS	Number of Disconnect requests	discnt
MAXREQQUEUED	Max request queue depth	dhigmax
TASKABENDS	Number of DB2SRV task abends	abndcnt
REQUEUES	Number of request requeues	requcnt
DEADLOCKS	Number of deadlock timeouts	deadcnt
READS_REQUESTS	Number of Read requests	readcnt
READS_AVGTIME	Avg Reads Time	readtcuw/readcnt
READS_MAXTIME	Max Reads Time	readtmxw
READS_AVGDB2TIME	Avg in DB2 Reads Time	readscuw/readcnt
READS_MAXDB2TIME	Max in DB2 Reads Time	readsmxw
WRITES_REQUESTS	Number of Write requests	writcnt
WRITES_AVGTIME	Avg Writes Time	writtcuw/writcnt
WRITES_MAXTIME	Max Writes Time	writtmxw
WRITES_AVGDB2TIME	Avg in DB2 Writes Time	writscuw/writcnt
WRITES_MAXDB2TIME	Max in DB2 Writes Time	writsmxw
LISTS_REQUESTS	Number of List requests	listcnt
LISTS_AVGTIME	Avg Lists Time	listtcuw/listcnt
LISTS_MAXTIME	Max Lists Time	listtmxw
LISTS_AVGDB2TIME	Avg in DB2 Lists Time	listscuw/listcnt
LISTS_MAXDB2TIME	Max in DB2 Lists Time	listsmxw
UPDATES_REQUESTS	Number of Update requests	updcnt
UPDATES_AVGTIME	Avg Updates Time	updttcuw/updcnt
UPDATES_MAXTIME	Max Updates Time	updttmxw
UPDATES_AVGDB2TIME	Avg in DB2 Updates Time	updtscuw/updcnt
UPDATES_MAXDB2TIME	Max in DB2 Updates Time	updtsmxw
DELETES_REQUESTS	Number of Delete requests	delecnt
DELETES_AVGTIME	Avg Deletes Time	deletcuw/delecnt
DELETES_MAXTIME	Max Deletes Time	deletmxw
DELETES_AVGDB2TIME	Avg in DB2 Deletes Time	delescuw/delecnt

Metric Name	Description	Origin
DELETES_MAXDB2TIME	Max in DB2 Deletes Time	delesmxw
SCSMAXROWS	SCS Max Rows	scsmaxr
SCSBUFSMALL	SCS Buffer Small	scsbfts
SCSSELECTS_REQUESTS	Number of SCS Select requests	scssel
SCSSELECTS_AVGTIME	Avg SCS Selects Time	scsstcuw/scssel
SCSSELECTS_MAXTIME	Max SCS Selects Time	scsstmxw
SCSSELECTS_AVGDB2TIME	Avg in DB2 SCS Selects Time	scssscuw/scssel
SCSSELECTS_MAXDB2TIME	Max in DB2 SCS Selects Time	scsssmxw
SCSINSERTS_REQUESTS	Number of SCS Insert requests	scsins
SCSINSERTS_AVGTIME	Avg SCS Insert Time	scsitcuw/scsins
SCSINSERTS_MAXTIME	Max SCS Insert Time	scsitmxw
SCSINSERTS_AVGDB2TIME	Avg in DB2 SCS Insert Time	scsiscuw/scsins
SCSINSERTS_MAXDB2TIME	Max in DB2 SCS Insert Time	scsismxw
SCSUPDATES_REQUESTS	Number of SCS Update requests	scsupd
SCSUPDATES_AVGTIME	Avg SCS Update Time	scsutcuw/scsupd
SCSUPDATES_MAXTIME	Max SCS Update Time	scsutmxw
SCSUPDATES_AVGDB2TIME	Avg in DB2 SCS Update Time	scsuscuw/scsupd
SCSUPDATES_MAXDB2TIME	Max in DB2 SCS Update Time	scsusmxw
SCSDELETES_REQUESTS	Number of SCS Delete requests	scsdel
SCSDELETES_AVGTIME	Avg SCS Deletes Time	scsdtcuw/scsdel
SCSDELETES_MAXTIME	Max SCS Deletes Time	scsdtmxw
SCSDELETES_AVGDB2TIME	Avg in DB2 SCS Deletes Time	scsdscuw/scsdel
SCSDELETES_MAXDB2TIME	Max in DB2 SCS Deletes Time	scsdsmxw
SSKSELECTS_REQUESTS	Number of SSK Select requests	ssksel
SSKSELECTS_AVGTIME	Avg SSK Selects Time	sskstcuw/ssksel
SSKSELECTS_MAXTIME	Max SSK Selects Time	sskstmxw
SSKSELECTS_AVGDB2TIME	Avg in DB2 SSK Selects Time	ssksscuw/ssksel
SSKSELECTS_MAXDB2TIME	Max in DB2 SSK Selects Time	sskssmxw
SSKINSERTS_REQUESTS	Number of SSK Insert requests	sskins
SSKINSERTS_AVGTIME	Avg SSK Insert Time	sskitcuw/sskins
SSKINSERTS_MAXTIME	Max SSK Insert Time	sskitmxw
SSKINSERTS_AVGDB2TIME	Avg in DB2 SSK Insert Time	sskiscuw/sskins
SSKINSERTS_MAXDB2TIME	Max in DB2 SSK Insert Time	sskismxw
SSKDELETES_REQUESTS	Number of SSK Delete requests	sskdel
SSKDELETES_AVGTIME	Avg SSK Deletes Time	sskdtcuw/sskdel
SSKDELETES_MAXTIME	Max SSK Deletes Time	sskdtmxw
SSKDELETES_AVGDB2TIME	Avg in DB2 SSK Deletes Time	sskdscur/sskdel
SSKDELETES_MAXDB2TIME	Max in DB2 SSK Deletes Time	sskdsmxw

## 7.1.4 IBM MQ Data Manager Statistics

Data Manager manages the links between messages and queues. It calls the buffer manager to process pages with messages on them. Data Manager's performance metrics can be used to detect Buffer Pool allocation problem. For example, you can create a business view to monitor the number of Get requests that get messages off the disk and issues a critical alert if the value is high. Data Manager's performance metrics are listed in Table 7-6 and out-of-the-box business views are listed in Table 7-7.

**Table 7-6. Data Manager Performance Metrics**

Metric Name	Description	Origin
MSGGETS	Number of Message Get requests	qistmget
MSGPUTS	Number of Message Put requests	qistmput
READAHEADSIO	Number of Read aheads doing I/O	qistraio
READAHEADSBP	Number of Read aheads from Buffer Pool	qistrabp
GETMSGDISK	Number of Gets that got message from disk	qistgetd
GETMSGBP	Number of Gets that got message from Buffer Pool	qistgetb

**Table 7-7. Data Manager Out-of-the-box Business Views**

Business View Name	Description	Metric(s) Used
Get Msg from Disk Monitor	Monitor the number of Gets that got msg off disk (QISTGETD).	QISTGETD

## 7.1.5 IBM MQ Log Manager Statistics

Log Manager manages the writing of log records, which are critical for maintaining the integrity of the system if there is a back out request or for system recovery. Log Manager's performance metrics can be used to detect logging suspended situations, log-read problems and monitor the buffer pool usage. For example, you can create a business view to monitor the number of logging suspended and issues a critical alert when the number is high. Log Manager's performance metrics are listed in Table 7-8 and out-of-the-box business views are listed in Table 7-9.

**Table 7-8. Log Manager Performance Metrics**

Metric Name	Description	Origin
BUFFERWAITS	Number of Buffer waits	qjstwtb
BUFFERPAGEIN	Number of times a log-write buffer had to be paged-in	qjstbpag
STORAGEREADS	LOG reads from output buffer	qjstrbuf
ACTIVEREADS	LOG reads from active log	qjstract
ARCHIVEREADS	LOG reads from archive log	qjstrarh
READDELAYED	Number of read accesses delayed due to unavailable resource	qjstwur
LOGGINGSUSPENDED	Number of times a log request resulted in a SUSPEND for a log write to occur	qjstlsus
WRITENOWAIT	Write request count, No Wait	qjstwrnw
LOGPAGESUSED	Total number of log write I/O requests	qjstlogw
CALLSLOGGINGTASK	Count of buffer writer calls	qjstbfwr
TAPEVOLCONTENTIONS	Number of read accesses delayed due to tape volume contention	qjsttvc

CHECKPOINTS	Count of checkpoints	qjstllcp
CISCREATED	Active log CI's created	qjstbfl
CISWRITES	Total number of log CI's written	qjstciwr

**Table 7-9. Log Manager Out-of-the-box Business Views**

Business View Name	Description	Metric(s) Used
Log Buffer Waits Monitor	Monitor the number of times a task was suspended because all the buffers were waiting to be written to the active log data set (QJSTWTB). If this field is non zero you should increase the value of OUTBUFF in the CSQ6LOGP system parameter macro.	BUFFERWAITS
Log Buffer Page in Monitor	Monitor the number of times a log-write buffer had to be paged in before it could be used (QJSTBPAG). If this field is non zero it indicates a possible problem with your Z/OS system. You might get benefit by decreasing the number of log buffers (OUTBUFF in the CSQ6LOGP system parameter macro) provided that QJSTWTB is zero.	BUFFERPAGEIN
In-Storage Log Reads Monitor	Monitor the number of read log requests satisfied from in-storage buffers (QJSTRBUF). If this value is large, applications are backing out and not committing requests; this might be an application problem. You can use the queue level statistics to identify which tasks are backing out rather than committing.	STORAGEREADS
Active Log Reads Monitor	Monitor the number of read log requests satisfied from the active log data set (QJSTRACT). If this value is non zero this means that you have long running tasks that are backing out.	ACTIVEREADS
Archive Log Reads Monitor	Number of read log requests satisfied from an archive log data set (QJSTRARH). If this value is non zero this means that you have long running tasks that are backing out and you are having to read from archive logs. You should determine why you have long running tasks backing out, and consider increasing the size or number of your active log data sets.	ARCHIVEREADS
Log Read Delayed Monitor	Monitor the number of read accesses delayed due to unavailable resource (QJSTWUR). This occurs during restart or rollback when using archive logs.	READDELAYED
Logging Suspended Monitor	Monitor the number of times a request to write data to buffers was suspended (QJSTLSUS). The request can be suspended because it has to wait until a log buffer has been written to the log data sets, or for example, there were insufficient log buffers.	LOGGINGSUSPENDED

Log Tape Requested Monitor	Monitors the number of tape requests. If QJSTWUR > 0 or QJSTTVVC > 0, then there have been tape requests.	TAPEVOLCONTENTIONS READDELAYED
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## 7.1.6 IBM MQ Lock Manager Statistics

Lock Manager manages locks for IBM MQ for z/OS. Lock Manager's performance metrics can be used to detect lock manager problems. For example, you can create a business view to monitor the number of requested locks held and issues a warning alert when the value is high. Lock Manager's performance metrics are listed in Table 7-10.

**Table 7-10. Lock Manager Performance Metrics**

Metric Name	Description	Origin
RELEASED	Number of RELEASE LOCK requests	qlstrell
REQUESTS	Number of GET LOCK requests	qlstgetl
LOCKREQHELDS	Number of times requested lock held	qlsthldl

## 7.1.7 IBM MQ Message Manager Statistics

Message Manager processes all IBM MQ API requests. Message Manager's performance metrics can be used to graph the number of messages PUT and GET on the QMGR during a period of time. Message Manager's performance metrics are listed in Table 7-11.

**Table 7-11. Message Manager Performance Metrics**

Metric Name	Description	Origin
OPENS	Number of MQOPEN requests	qmstopen
CLOSES	Number of MQCLOSE requests	qmstclos
GETS	Number of MQGET requests	qmstget
PUTS	Number of MQPUT requests	qmstput
PUT1	Number of MQPUT1 requests	qmstput1
SUBSCRIBES	Number of Subscribe requests	qmstsub
PUBLISHS	Number of Publish requests	qmstpubs
CALLBACKS	Number of Callback requests	qmstcb
SUBRQS	Number of Subrq requests	qmstsubr
CONTROLS	Number of Control requests	qmstctl
STATUS	Number of Status requests	qmststus

## 7.1.8 IBM MQ Storage Manager Statistics

Storage Manager manages storage pool allocation, expansion and de-allocation for IBM MQ for z/OS. Storage Manager's performance metrics can be used to detect QMGR's Short on Storage (SOS) conditions. Also, to monitor the number of storage contractions and abend due to Short on Storage (SOS) conditions. For example, you can create a business view to monitor the Short on Storage conditions and issues a critical alert when the condition occurs. Storage Manager's performance metrics are listed in Table 7-12 and out-of-the-box business views are listed in Table 7-13.

**Table 7-12. Storage Manager Performance Metrics**

<b>Metric Name</b>	<b>Description</b>	<b>Origin</b>
STORAGECOMPRESSION	Storage Compression	qsstcont
SHORTONSTORAGE	Short On Storage	qsstcrit
ABENDSOS	ABEND due to Short on Storage	qsstabnd

<b>Table 7-13. Storage Manager Out-of-the-box Business Views</b>		
<b>Business View Name</b>	<b>Description</b>	<b>Metric(s) Used</b>
Short On Storage Monitor	Monitor the number of Short on Storage conditions (QSSTCRIT).	SHORTONSTORAGE
Abend SOS Monitor	Monitor the number of abend issued because of Short on Storage condition.	ABENDSOS
Storage Compression Monitor	Monitor the number of storage compressions issued for short on storage condition (QSSTCONT).	STORAGECOMPRESSION

## 7.1.9 IBM MQ Topic Manager Statistics

Topic Manager's performance metrics can be used to detect Publish-Subscribe problems. For example, you can create a business view to monitor the number of Expired Subscriptions and number of Publishing to no Subscriber issues a warning alert when the value is high. Topic Manager's performance metrics are listed in Table 7-14.

<b>Table 7-14. Topic Manager Performance Metrics</b>		
<b>Metric Name</b>	<b>Description</b>	<b>Origin</b>
SUBSCRIPTIONS	Total Subscription requests	qtststot
PUBLISHS	Total messages published	qtsttmsg
PUBHIGH	Messages published High Water Mark	qtstphig
PUBLOW	Messages published Low Water Mark	qtstplow
PUBNOS	Messages published to no-subscriber	qtstpnos
SUBEXPIRED	Subscriptions expired	qtstsexp
PUBAVGTIME	Avg Publish time	qtstetto/qtsttmsg
DURABLESUB	Durable subscription requests	qtstsdur

## 7.1.10 IBM MQ Page Sets Statistics

Page Sets performance metrics can be used to detect problems with page sets. For example, you can create a business view to monitor the number of page set usage and issues a warning alert when the percent of pages in use is high or the number of total extents value is high. Page Set's performance metrics are listed in Table 7-15 and out-of-the-box business views are listed in Table 7-16.

**Table 7-15. Page Sets Performance Metrics**

Metric Name	Description	Origin
STATUS	Page set status	DIS USAGE
ALLOCATEDPAGES	Number of pages allocated	DIS USAGE
UNUSEDPAGES	Number of unused pages	DIS USAGE
PCTPAGESINUSE	Percentage of pages in use	DIS USAGE
PERSISTDATAPAGES	Number of persistent data pages	DIS USAGE
NONPERSISTDATAPAGES	Number of non-persistent data pages	DIS USAGE
TOTALEXTENTS	Total number of extents	DIS USAGE
EXPANDTYPE	Page-set expand type	DIS USAGE
BUFFERPOOL	Buffer Pool associated to Page-set	bhdrpool
DDNAME	Page-set DDNAME	psetddn
DSNAME	Page-set dataset name	psetdsn

**Table 7-16. Page Sets Out-of-the-box Business Views**

Business View Name	Description	Metric(s) Used
Page sets Status Monitor	Monitor Page Set usage and issues an alert when the current Page Set is not available.	STATUS
Page sets Usage Monitor	Monitors Page Set usage and issues an alert when the percentage of pages in use is greater than 90% and the number of total extents equals 200.	PCTPAGESINUSE TOTALEXTENTS

## 7.2 DB2

You can use z/OS DB2 performance metrics collected by zExpert agent to create business views that monitor specific situations in your z/OS DB2 environment. zExpert agent provides the following performance metrics for z/OS DB2:

- DB2 Buffer Manager Performance Statistics ([section 7.2.1](#))
- DB2 Data Manager Performance Statistics ([section 7.2.2](#))
- DB2 Log Manager Performance Statistics ([section 7.2.3](#))
- DB2 Storage Manager Performance Statistics ([section 7.2.4](#))
- DB2 Service Controller Performance Statistics ([section 7.2.5](#))
- DB2 RDS Performance Statistics ([section 7.2.6](#))

### 7.2.1 DB2 Buffer Manager Performance Statistics

Buffer Manager manages the buffer pools in virtual storage, the writing of pages to page sets as the buffer pools become full, and the reading of pages from page sets. Buffer Manager's performance metrics can be used to detect problems within buffer pools. For example, you can create a business view to monitor buffer pool usage which will issue a critical alert when low buffer availability is detected within a pool. Buffer Manager's performance metrics are listed in Table 7-17 and out-of-the-box business views are listed in Table 7-18.

Metric Name	Description	Origin
VIRTUAL_POOL	Allocated buffers for Virtual Pool	wphysvpl
BUFFERS_ALLOCATED	Number of buffers assigned	wphcurbt
BUFFERS_IN_USE	Number of buffers in use	wphyscba
BUFFERS_ACTIVE	Number of buffers currently active	wphcurba
PCT_AVAILABLE_BUFFERS	Percent available buffers in pool	100*(wphcurbt-wphyscba)/wphcurbt
NO_BUFFERS	Number of GETPAGE failures due to Buffer Pool full condition	wphysxfl
SYNC_READ_IO_RANDOM	Number of random synchronous read I/Os	wphysrio
SYNC_READ_IO_SEQ	Number of sequential synchronous read I/Os	wphysrio
ASYSNC_WRITE_IO	Number of asynchronous write I/Os	wphyswio
SYNC_WRITE_IO	Number of immediate write I/Os	wphysimw
GETP_PAGE-INS	Number of Page-ins due to GETPAGE	wphysrpi
WRITEP_PAGE-INS	Number of Page-ins due to WRITEPAGE	wphyswpi
LIST_PREFETCH	Number of list prefetch requests	wphyslpf
LIST_PREFETCH_READ	Number of list prefetch page read	wphyslpp
LIST_PREFETCH_IO	Number of read I/Os for list prefetch	wphyslio
DYN_PREFETCH	Number of dynamic prefetch requests	wphysdpf
DYN_PREFETCH_READ	Number of dynamic prefetch page read	wphysdpp
DYN_PREFETCH_IO	Number of read I/Os for dynamic prefetch	wphysdio

Metric Name	Description	Origin
SEQ_PREFETCH	Number of sequential prefetch requests	wphysseq
SEQ_PREFETCH_READ	Number of pages read because of sequential prefetch	wphysssp
SEQ_PREFETCH_IO	Number of sequential prefetch read I/Os	wphyspio
SYS_PAGE_UPD	Number of system pages updates	wphyssws
SYS_PAGE_WRT	Number of system pages written	wphyspws
RANDOM_GETPAGE	Number of random GETPAGE issued	wphysget
LPL_PAGES_ADDED	Number of times pages added to LPL	wphyslpl
DWT_HIT	Number of times reach deferred write threshold	wphysdwt
VERTICAL_DWT_HIT	Number of times reach WPHFWT threshold	wphysdvw
HIT_RATIO	Buffer pool hit ratio	100*(wphysget-wphysrio)/wphysget

Table 7-18. Buffer Manager Out-of-the-box Business Views

Business View Name	Description	Metric(s) Used
BP No Buffers Available Monitor	Monitor the number of GETPAGE failures due to Buffer pool full condition.	NO_BUFFERS
BP Read In From Disk Monitor	Monitors the number of pages read in from disk (WPHYSRIO).	SYNC_READ_IO_RANDOM
BP Written Immed To Disk Monitor	Monitors the number of pages written immediately to disk (WPHYSIMW). The value should be close to zero per hour.	SYNC_WRITE_IO
BP Buffers Availability Monitor	Monitor percent available buffers (100*(wphcurbt-physcba)/wphcurbt) and issues a warning ( 15% & >5%) or critical (5%) alert when detect low buffer availability within a pool.	PCT_AVAILABLE_BUFFERS

## 7.2.2 DB2 Data Manager Performance Statistics

Data Manager's performance metrics are listed in Table 7-19.

Table 7-19. Data Manager Performance Metrics

Metric Name	Description	Origin
TERM_BY_RDS_LIMIT	Number of times RID list processing terminated because of the number of RIDs that can fit into the guaranteed number of RIDs blocks was greater than the maximum limit (25% of table size).	qistrllm
TERM_BY_DM_LIMIT	The number of times a RID list processing operation terminated because the number of RID entries was greater than the physical limit of approximately 16 million RIDs.	qistrplm
RID_EXHAUSTED_STORAGE	Number of times RID list processing was not used because DBM1 storage was exhausted.	qistrstg

Metric Name	Description	Origin
RID_MAX	Number of times the maximum RID pool storage was exceeded.	qistrmax
RID_IN_USE	Number of RID blocks currently in use.	qistrcur
RID_HWM	Highest number of RID blocks in use at any time since DB2 startup.	qistrhig
TOT_COLS_BYPASSED	Total number of columns for which an invalid select procedures was encountered.	qistcols
MAX_STORAGE	Maximum amount of storage that can be used	qistwfmx
MAX_STORAGE_EXCEEDED	Number of times the maximum amount of storage was exceeded.	qistwfne
MAX_STORAGE_USED	Maximum amount of storage used in the work file database.	qistwfmw
CUR_STORAGE_USED	Current storage used in the work file database.	qistwfcu
CUR_FRACTIONS_STORAGE	Current fractions storage used in the work file database.	qistwfcf
TOT_4K_STORAGE	Total storage used for 4 KB table spaces.	qistwf04
TOT_FRACTIONS_4K_STORAGE	Total fractions storage used for 4 KB tables spaces.	qistw04k
TOT_32K_STORAGE	Total storage used by for 32 KB table spaces	qistwf32
TOT_FRACTIONS_32K_STORAGE	Total fractions storage used for 32 KB table spaces.	qistw32k
32K_TABLESPACE_USED	Number of times that space in a 32 KB page table space was used because space in a 4 KB page table was not available.	qistwfp1
4K_TABLESPACE_USED	Number of times that space in a 4 KB page table space was used because space in a 32 KB page table was not available.	qistwfp2

### 7.2.3 DB2 Log Manager Performance Statistics

Log Manager manages the writing of log records, which are critical for maintaining the integrity of the system if there is a back out request or for system recovery. Log Manager's performance metrics can be used to detect a logging suspended situation, log-read problems, and monitor the buffer pool usage. For example, you can create a business view to monitor the number of times logging is suspended and issues a critical alert when the number is high. Log Manager's performance metrics are listed in Table 7-20 and out-of-the-box business views are listed in Table 7-21.

**Table 7-20. Log Manager Performance Metrics**

Metric Name	Description	Origin
BUFFER_WAITS	Number of Buffer waits	qjstwtb
BUFFER_PAGEIN	Number of times a log-write buffer had to be paged-in	qjstbpag
STORAGE_READS	LOG reads from output buffer	qjstrbuf
ACTIVE_READS	LOG reads from active log	qjstract
ARCHIVE_READS	LOG reads from archive log	qjstrarh
READ_DELAYED	Number of read accesses delayed due to unavailable resource	qjstwur
LOGGING_SUSPENDED	Number of times a log request resulted in a SUSPEND for a log write to occur	qjstlsus

Metric Name	Description	Origin
WRITE_NOWAIT	Write request count, No Wait	qjstwrnw
LOG_PAGES_USED	Total number of log write I/O requests	qjstlogw
CALLS_LOGGING_TASK	Count of buffer writer calls	qjstbfwr
TAPEVOL_CONTENTIONS	Number of read accesses delayed due to tape volume contention	qjsttvc
CIS_CREATED	Active log CI's created	qjstbfl
CIS_WRITES	Total number of log CI's written	qjstciwr

Table 7-21. Log Manager Out-of-the-box Business Views

Business View Name	Description	Metric(s) Used
Log Buffer Waits Monitor	Monitor the number of times a task was suspended because all the buffers were waiting to be written to the active log data set (QJSTWTB).	BUFFER_WAITS
Log Buffer Page in Monitor	Monitor the number of times a log-write buffer had to be paged in before it could be used (QJSTBPAG). If this field is non zero it indicates a possible problem with your Z/OS system. You might get benefit by decreasing the number of log buffers provided that QJSTWTB is zero.	BUFFER_PAGEIN
In-Storage Log Reads Monitor	Monitor the number of read log requests satisfied from in-storage buffers (QJSTRBUF). If this value is large, applications are backing out and not committing requests; this might be an application problem.	STORAGE_READS
Active Log Reads Monitor	Monitor the number of read log requests satisfied from the active log data set (QJSTRACT). If this value is non zero this means that you have long running tasks that are backing out.	ACTIVE_READS
Archive Log Reads Monitor	Number of read log requests satisfied from an archive log data set (QJSTRARH). If this value is non zero this means that you have long running tasks that are backing out and you are having to read from archive logs. You should determine why you have long running tasks backing out, and consider increasing the size or number of your active log data sets.	ARCHIVE_READS
Log Read Delayed Monitor	Monitor the number of read accesses delayed due to unavailable resource (QJSTWUR). This occurs during restart or rollback when using archive logs.	READ_DELAYED
Logging Suspended Monitor	Monitor the number of times a request to write data to buffers was suspended (QJSTLSUS). The request can be suspended because it has to wait until a log buffer has been written to the log data sets, or for example, there were insufficient log buffers.	LOGGING_SUSPENDED
Log Tape Requested Monitor	Monitors the number of tape requests. If QJSTWUR > 0 or QJSTTVC > 0, then there have been tape requests.	TAPEVOL_CONTENTIONS READ_DELAYED

## 7.2.4 DB2 Storage Manager Performance Statistics

Storage Manager manages storage pool allocation, expansion, and de-allocation of DB2 for z/OS. Storage Manager's performance metrics can be used to detect DB2's Short-on-Storage (SOS) conditions and to monitor the number of storage contractions and abend due to Short-on-Storage (SOS) conditions. For example, you can create a business view to monitor the Short-on-Storage conditions and issue a critical alert when the condition occurs. Storage Manager's performance metrics are listed in Table 7-22 and out-of-the-box business views are listed in Table 7-23.

Metric Name	Description	Origin
STORAGE_COMPRESSION	Storage Compression	qsstcont
SHORT_ON_STORAGE	Short On Storage	qsstcrit
ABEND_SOS	ABEND due to Short on Storage	qsstabnd

Business View Name	Description	Metric(s) Used
Short On Storage Monitor	Monitor the number of Short on Storage conditions (QSSTCRIT).	SHORT_ON_STORAGE
Abend SOS Monitor	Monitor the number of abend issued because of Short on Storage condition.	ABEND_SOS
Storage Compression Monitor	Monitor the number of storage compressions issued for short on storage condition (QSSTCONT).	STORAGE_COMPRESSION

## 7.2.5 DB2 Service Controller Performance Statistics

Service Controller's performance metrics are listed in Table 7-24.

Metric Name	Description	Origin
ALLOC_ATTEMPTS	Number of allocation attempts.	qtalloca
ALLOCS	Number of successful allocations.	qtalloc
AUTOBIND_ATTEMPTS	Number of automatic bind attempts.	qtabinda
AUTOBINDS	Number of successful automatic binds.	qtabind
FREE_PLAN_ATTEMPTS	Number of attempts to free a plan.	qtafreea
FREED_PLANS	Number of plans freed.	qtplnfrd
AUTH_IN_CACHE	Number of successful auth checks for packages.	qtracaut
AUTH_NOT_IN_CACHE	Number of routine auth checks that could not.	qtracnot
OVERWROTE_AUTHID	Number of times DB2 overwrote an authid.	qtracow1
OVERWROTE_ROUTINE	Number of times DB2 overwrote a routine.	qtracow2
NOT_ABLE_TO_ADD	Number of times DB2 was not able to add.	qtracnac

## 7.2.6 DB2 RDS Performance Statistics

RDS's performance metrics are listed in Table 7-25.

Table 7-25. RDS Performance Metrics		
Metric Name	Description	Origin
SELECTS	Number of SELECTs	qxselect
INSERTS	Number of INSERTs	qxinsrt
UPDATES	Number of UPDATEs	qxupdte
FETCHS	Number of FETCHs	qxfetch
DELETES	Number of DELETEs	qxdelet
DESCRIBES	Number of DESCRIBEs	qxdesc
PREPARES	Number of PREPAREs	qxprep
OPENS	Number of OPENs	qxopen
CLOSES	Number of CLOSEs	qxclose
CREATE_TABLE	Number of CREATE TABLE	qxcrtab
CREATE_INDEX	Number of CREATE INDEX	qxcrinx
CREATE_TABLESPACE	Number of CREATE TABLESPACE	qxctabs
CREATE_SYNONYM	Number of CREATE SYNONYM	qxcrsyn
CREATE_ALIAS	Number of CREATE ALIAS	qxcrals
CREATE_DATABASE	Number of CREATE DATABASE	qxcrdab
CREATE_STORAGE_GROUP	Number of CREATE STORAGE GROUP	qxcrstg
CREATE_VIEW	Number of CREATE VIEW	qxdefvu
DROP_TABLE	Number of DROP TABLE	qxdrpta
DROP_INDEX	Number of DROP INDEX	qxdrpix
DROP_TABLESPACE	Number of DROP TABLESPACE	qxdrpts
DROP_SYNONYM	Number of DROP SYNONYM	qxdrpsy
DROP_ALIAS	Number of DROP ALIAS	qxdrpal
DROP_DATABASE	Number of DROP DATABASE	qxdrpdb
DROP_STORAGE_GROUP	Number of DROP STORAGE GROUP	qxdrpst
DROP_VIEW	Number of DROP VIEW	qxdrpvu
ALTER_TABLE	Number of ALTER TABLE	qxaltta
ALTER_INDEX	Number of ALTER INDEX	qxaltix
ALTER_TABLESPACE	Number of ALTER TABLESPACE	qxaltts
ALTER_DATABASE	Number of ALTER DATABASE	qxaldab
ALTER_STORAGE_GROUP	Number of ALTER STORAGE GROUP	qxaltst
SQLCALL	Number of SQL CALL statements executed	qxcall
SQLCALL_ABENDED	Number of times a stored procedure ABENDED	qxcallab
SQLCALL_TIMEDOUT	Number of times an SQL CALL statement timed out	qxcallto

Metric Name	Description	Origin
SQLCALL_REJECTED	Number of times an SQL CALL statement was rejected	qxcallrj
ROWS_FETCHED	Number of rows fetched	qxrowsfetched
ROWS_INSERTED	Number of rows inserted	qxrowsinsrtd
ROWS_UPDATED	Number of rows updated	qxrowsupdttd
ROWS_DELETED	Number of rows deleted	qxrowsdeletd

## 7.3 CICS

You can use z/OS CICS/TS performance metrics collected by zExpert agent to create business views that monitor specific situations in your z/OS CICS/TS environment. zExpert agent provided the following performance metrics for z/OS CICS/TS:

- Autoinstall Performance Statistics ([section 7.3.1](#))
- DB2 Connection Performance Statistics ([section 7.3.2](#))
- Dispatcher Performance Statistics ([section 7.3.3](#))
- Enqueue Manager Performance Statistics ([section 7.3.4](#))
- IPCONN Performance Statistics ([section 7.3.5](#))
- JVMPOOL Performance Statistics ([section 7.3.6](#))
- Loader Library Performance Statistics ([section 7.3.7](#))
- MQ Connection Performance Statistics ([section 7.3.8](#))
- MVSTCB Global Performance Statistics ([section 7.3.9](#))
- Pipeline Performance Statistics ([section 7.3.10](#))
- Program Autoinstall Performance Statistics ([section 7.3.11](#))
- Program Performance Statistics ([section 7.3.12](#))
- Recovery Manager Performance Statistics ([section 7.3.13](#))
- DSA Storage Performance Statistics ([section 7.3.14](#))
- Log Manager Log Stream Performance Statistics ([section 7.3.15](#))
- Domain Subpool Performance Statistics ([section 7.3.16](#))
- Task Subpool Performance Statistics ([section 7.3.17](#))
- Dump Domain Performance Statistics ([section 7.3.18](#))
- Sockets Global Performance Statistics ([section 7.3.19](#))
- Transient Data Performance Statistics ([section 7.3.20](#))
- Transaction Manager Performance Statistics ([section 7.3.21](#))
- Transaction Class Performance Statistics ([section 7.3.22](#))
- Temporary Storage Performance Statistics ([section 7.3.23](#))
- Web Domain Performance Statistics ([section 7.3.24](#))
- VTAM Performance Statistics ([section 7.3.25](#))
- Pipeline Domain Performance Statistics ([section 7.3.26](#))

## 7.3.1 Autoinstall Performance Metrics

Autoinstall performance metrics are listed in Table 7-26.

<b>Table 7-26. Auto-install Performance Metrics</b>		
<b>Metric Name</b>	<b>Description</b>	<b>Origin</b>
TOT_ATTEMPTS	Total Autoinstall attempts	a04vadat
TOT_REJECTED	Total Autoinstall rejected	a04vadrj
TOT_DELETED	Total Autoinstall deleted	a04vadlo
TOT_QLOGONS	Number of queued logon	a04vadqt
PEAK_ATTEMPTS	Peak concurrent attempts	a04vadpk
PEAK_REACHED	Number of times peak reached	a04vadpx
PEAK_QLOGONS	Peak of queued's logons	a04vadqk
REM_TERMS_BLT	Remote terminals built	a04skblt
REM_TERMS_INS	Remote terminals installed	a04skins
REM_TERM_DEL	Remote terminals deleted	a04skdel
REMDEL_RECVD	Number of remdels received	a04rdrec
REMDEL_ISSUED	Number of remdels issued	a04rdiss
REMDEL_DELETED	Number of remdel deletes	a04rddel
CURR_IDLE_CNT	Current idle count	a04cidct
CURR_IDLE_TIME	Current idle time	a04cidle
CURR_MAX_IDLE_TIME	Current maximum idle time	a04cmaxi
TOT_IDLE_CNT	Total idle count	a04tidct
TOT_IDLE_TIME	Total idle time	a04tidle
TOT_MAX_IDLE_TIME	Total maximum idle time	a04tmaxi

## 7.3.2 DB2 Connection Performance Statistics

DB2 Connection performance metrics are listed in Table 7-27 and out-of-the-box Business Views in Table 7-28.

<b>Table 7-27. DB2 Connection Performance Metrics</b>		
<b>Metric Name</b>	<b>Description</b>	<b>Origin</b>
DB2CONN	Name of DB2CONN	d2g_db2conn_name
DB2_SYSID	DB2 SYSID	d2g_db2_id
DB2_GROUPID	DB2 Group Id	d2g_db2_group_id
DB2_RELEASE	DB2 release	d2g_db2_release
TCB_LIMIT	Maximum number of TCBs	d2g_tcb_limit
TCB_CURRENT	Current number of TCBs	d2g_tcb_current
TCB_HWM	HWM of TCBs	d2g_tcb_hwm
TCB_FREE	Current number of free TCBs	d2g_tcb_free

Metric Name	Description	Origin
TCB_READYQ	Number of tasks on TCB readyq	d2g_tcb_readyq_current
TCB_READYQ_HWM	Peak number of tasks on TCB readyq	d2g_tcb_readyq_hwm
RESYNC_UOW	Resync UOW's	d2g_resyncmember
POOL_PLAN_NAME	Static plan name	d2g_pool_plan_name
POOL_PLANEXIT_NAME	Plan exit name	d2g_pool_planexit_name
POOL_AUTHID	Static Auth id	d2g_pool_authid
POOL_AUTHTYPE	Auth type	d2g_pool_authtype
POOL_ACCOUNTREC	Accountrec setting	d2g_pool_accountrec
POOL_THREADWAIT	Threadwait setting	d2g_pool_threadwait
POOL_PRIORITY	Thread priority	d2g_pool_priority
POOL_CALLS	Number of calls using pool	d2g_pool_calls
POOL_SIGNONS	Number of signons	d2g_pool_signons
POOL_COMMITS	Number of commits	d2g_pool_commits
POOL_ABORTS	Number of aborts	d2g_pool_aborts
POOL_SINGLE_PHASE	Number of single phase commits	d2g_pool_single_phase
POOL_THREAD_REUSE	Number of thread reuses	d2g_pool_thread_reuse
POOL_THREAD_TERM	Number of thread terminates	d2g_pool_thread_term
POOL_THREAD_WAITS	Number of thread waits	d2g_pool_thread_waits
POOL_THREAD_LIMIT	Maximum number of threads	d2g_pool_thread_limit
POOL_THREAD_CURRENT	Current number of threads	d2g_pool_thread_current
POOL_THREAD_HWM	Peak number of threads	d2g_pool_thread_hwm
POOL_TASK_CURRENT	Current number of tasks	d2g_pool_task_current
POOL_TASK_HWM	Peak number of tasks	d2g_pool_task_hwm
POOL_TASK_TOTAL	Total number of tasks	d2g_pool_task_total
POOL_READYQ	Number of tasks on ready queue	d2g_pool_readyq_current
POOL_READYQ_HWM	Peak number of tasks on ready queue	d2g_pool_readyq_hwm
POOL_PARTIAL_SIGNONS	Number of partial signons	d2g_pool_partial_signons
POOL_THREAD_CREATE	Number of thread creates	d2g_pool_thread_create

**Table 7-28. DB2 Connection Out-of-the-box Business Views**

Business View Name	Description	Metric(s) Used
DB2CONN Pool Monitor	Monitor the number of aborts	POOL_ABORTS
DB2CONN Thread Waits Monitor	Monitor the number of thread waits	POOL_THREAD_WAITS
DB2CONN Thread HWM Monitor	Monitor the peak number of threads	POOL_THREAD_HWM

### 7.3.3 Dispatcher Performance Statistics

Dispatcher performance metrics are listed in Table 7-29, Dispatcher TCB Mode in Table 7-30, and Dispatcher TCB Pool in Table 7-31.

<b>Table 7-29. Dispatcher Performance Metrics</b>		
<b>Metric Name</b>	<b>Description</b>	<b>Origin</b>
CURR_ICV_TIME	Current ICV time	dsgicvt
CURR_ICVR_TIME	Current ICVR time	dsgicvrt
CURR_ICVTSD	Current ICVTSD time	dsgicvsd
CURR_TASKSCNT	Current number of tasks	dsgcnt
PEAK_TASKSCNT	Peak number of tasks	dsgpnt
EXCESS_TCB_SCANS	Number of excess TCB scans	dsgxscns
TCB_SCANS	Number of TCB scans	dsgxscnn
EXCESS_TCB_DETACHED	Total number of excess TCBs detached	dsgxtcbd

<b>Table 7-30. Dispatcher TCB Mode Performance Metrics</b>		
<b>Metric Name</b>	<b>Description</b>	<b>Origin</b>
TCB_MODE	TCB Mode	dsgtcbmd
TCB_MODE_POOL	TCB Mode Pool	dsgtcbmp
TCB_ATTACHES	Number of TCB attaches	dsgntcba
TCB_ATTACH_FAILS	Number of TCB attach failures	dsgtcbaf
CURR_TCB_ATTACHED	Current number of TCBs attached	dsgtcbca
PEAK_TCB_ATTACHED	Peak number of TCBs attached	dsgtcbpa
CURR_TCB_USED	Current number of TCBs used by mode	dsgtbcu
PEAK_TCB_USED	Peak number of TCBs used by mode	dsgtcbpu
TCB_ALLOC_TASKS	Number of TCB allocates to task	dsgtcbal
TCB_DETACHES_UNCLEAN	Number of TCB detaches - unclean	dsgtcbdu
TCB_DETACHES_STOLEN	Number of TCB detaches - stolen	dsgtcbds
TCB_DETACHES_EXCESS	Number of TCB detaches - excess	dsgtcbdx
TCB_DETACHES_OTHER	Number of TCB detaches - other	dsgtcbdo
TCB_STEALS	Number of TCB steals	dsgtcbst
TCB_MISMATCHES	Number of TCB mismatches	dsgtcbmm
PARTITION_EXITS	Number of partition exits	dsgsysw
TCB_WAIT_TIME	Total CICS wait time	dsgtwt
TCB_DISP_TIME	Total CICS dispatch time	dsgtdt
TASK_DISP_CPU TIME	Total CPU time for dispatch task	dsgtct
TCB_CPU TIME	Total TCB's CPU time	dsgact

<b>Table 7-31. Dispatcher TCP Pool Performance Metrics</b>		
<b>Metric Name</b>	<b>Description</b>	<b>Origin</b>
MAX_TCB	TCB Mode	dsgmxtcb
CURR_TCB_ATTACHED	Current number of TCBs attached	dsgcnuat
PEAK_TCB_ATTACHED	Peak number of TCBs attached	dsgpnuat
CURR_TCB_IN_USE	Current number of TCBs used by mode	dsgcnuus
PEAK_TCB_IN_USE	Peak number of TCBs used by mode	dsgpnuus
AT_TCB_POOL_LIMIT	Number of times at TCB Pool limit	dsgntcbl
WAIT_TIME_AT_TCB_LIMIT	Number of wait time at TCB Pool limit	dsgtotwl
CURR_WAITING_TIME	Current waiting time	dsgcurwt
MVS_STG_CONSTRAINT	Total number of MVS storage constraint	dsgtotmt
TOT_WAITS	Total number of waits	dsgtotnw
DELAYED_BY_MVS_STG	Requests delayed by MVS storage	dsgtotmw
CURR_TASKS_WAITING_MVS_STG	Current number of tasks waiting for MVS storage	dsgcurnw
PEAK_TASKS_WAITING_MVS_STG	Peak number of tasks waiting for MVS storage	dsgpeanw
TCB_MISMATCH_WAITS	Total number of TCB mismatch waits	dsgmmwts
TCB_MISMATCH_WAIT_TIME	Total TCB mismatch wait time	dsgmmwtm
CURR_TCB_MISMATCH_WAITS	Current TCB mismatch waits	dsgcmmws
PEAK_TCB_MISMATCH_WAITS	Peak TCB mismatch waits	dsgpmmws
CURR_TCB_MISMATCH_WAITING_TIME	Current TCB mismatch waiting time	dsgcmmwt

### 7.3.4 Enqueue Manager Performance Statistics

Enqueue Manager performance metrics are listed in Table 7-32 and out-of-the-box Business Views in Table 7-33.

<b>Table 7-32. Enqueue Manager Performance Metrics</b>		
<b>Metric Name</b>	<b>Description</b>	<b>Origin</b>
TOT_ENQ_ISSUED	Total number of enqueues issued	nqgtnqsi
TOT_ENQ_WAITED	Total number of enqueues waited	nqgtnqsw
CURR_ENQ_WAITING	Current number of enqueues waiting	nqgenqsw
SPX_ENQ_WAITED	Total sysplex enqueues waited	nqggnqsw
SPX_ENQ_WAITING	Current number of sysplex enqueues waiting	nqgsnqsw
TOT_ENQ_RETAINED	Total number of enqueues that were retained	nqgtnqsr
CURR_ENQ_RETAINED	Current enqueues retained	nqgenqsr
TOT_ENQBUSY_REJECTED	Total immediate rejected ENQBUSY	nqgtirjb
TOT_ENQ_REJECTED	Total immediate rejected ENQ retained	nqgtirjr
TOT_WAITENQ_RETAINED	Total waiting enqueues rejected retained	nqgtwrjr
TOT_WAITENQ_PURGE_OPR	Total waiting enqueues purged by operator	nqgtwpop
TOT_WAITENQ_PURGE_TMO	Total waiting enqueues purged by timeout	nqgtwpto

**Table 7-33. Enqueue Manager Out-of-the-box Business Views**

Business View Name	Description	Metric(s) Used
Enqueue Task Waits Monitor	Monitor enqueue task waits	CURR_ENQ_WAITING
Enqueue Waits Monitor	Monitor the CICS enqueue waits	TOT_ENQ_WAITED

### 7.3.5 IPCONN Performance Statistics

IPCONN performance metrics are listed in Table 7-36.

**Table 7-36. IPCONN Performance Metrics**

Metric Name	Description	Origin
APPLID	IPCONN applid	isr_applid
NETWORKID	IPCONN network id	isr_network_id
HOSTNAME	IPCONN Host name	isr_host_name
PORT	IPCONN port number	isr_port_number
IPADDR	IP Resolved address	isr_ipconn_ip_address
IPFAMILY	IP Family	isr_ipconn_ip_family
SEND_SESS	Send sessions	isr_send_sessions
CURR_SEND_SESS	Current send sessions	isr_current_send_sessions
PEAK_SEND_SESS	Peak send sessions	isr_peak_send_sessions
RECV_SESS	Receive sessions	isr_receive_sessions
CURR_RECV_SESS	Current receive sessions	isr_current_receive_sessions
PEAK_RECV_SESS	Peak receive sessions	isr_peak_receive_sessions
TOT_ALLOC	IPCONN total allocates	isr_total_allocates
CURR_QUEUED_ALLOC	Current queued allocates	isr_current_queued_allocates
PEAK_QUEUED_ALLOC	Peak queued allocates	isr_peak_queued_allocates
FAILED_ALLOC_LINK	Failed allocates - Link	isr_allocates_failed_link
FAILED_ALLOC_OTHR	Failed allocates - Other	isr_allocates_failed_other
TRANS_ATTACHED	Number of transactions attached	isr_trans_attached
RTERM_STARTED	Number of remote terminal started	isr_remote_term_starts

## 7.3.6 JVMPOOL Performance Statistics

JVMPOOL performance metrics are listed in Table 7-37.

<b>Table 7-37. JVMPOOL Performance Metrics</b>		
<b>Metric Name</b>	<b>Description</b>	<b>Origin</b>
CURR_JVMS	Current JVMs	sjg_current_jvms
PEAK_JVMS	Peak JVMs	sjg_peak_jvms
TOT_REQS	Total JVM program requests	sjg_jvm_reqs_total
TOT_REUSE_REQS	JVM requests – with JVM reuse	sjg_jvm_reqs_reuse
TOT_INIT_REQS	JVM requests – JVM initialized	sjg_jvm_reqs_init
TOT_MISMATCH_REQS	JVM requests – JVM mismatch	sjg_jvm_reqs_mismatch
TOT_TERM_REQS	JVM requests – JVM terminated	sjg_jvm_reqs_terminate
CURR_CACHE_JVMS	Current class cache JVMs	sjg_current_cache_jvms
PEAK_CACHE_JVMS	Peak class cache JVMs	sjg_peak_cache_jvms
CLASS_CACHE_REQS	JVM request – Class cache	sjg_jvm_reqs_cache

## 7.3.7 Loader Library Performance Statistics

Loader Library performance metrics are listed in Table 7-38.

<b>Table 7-38. Loader Library Performance Metrics</b>		
<b>Metric Name</b>	<b>Description</b>	<b>Origin</b>
LIB_CRITICAL	Library critical	ldb_library_critical
LIB_STATUS	Library enable status	ldb_library_enable_status
LIB_SRCH_POS	Library search position	ldb_library_search_pos
LIB_RANKING	Library ranking	ldb_library_ranking
LIB_PGM_LOADS	Library program loads	ldb_library_prog_loads
LIB_NUM_DSN	Library number dsnames	ldb_library_numdsname

## 7.3.8 MQ Connection Performance Statistics

MQ Connection performance metrics are listed in Table 7-39 and out-of-the-box Business Views in Table 7-40.

**Table 7-39. MQ Connection Performance Metrics**

Metric Name	Description	Origin
QMGR_NAME	Queue Manager name	mqq_qmgr_name
QMGR_RELEASE	Release of WMQ vvvrr	mqq_mq_release
CONNECTION_STATUS	Connection status	mqq_connection_status
RESYNCMEMBER	Resyncmember setting	mqq_resyncmember
CURRENT_TASKS	Number of current tasks	mqq_ttasks
FUTILE_ATTEMPTS	Number of futile attempts	mqq_tfutileatt
TOTAL_CALLS	Total number of calls	mqq_tapi
TOTAL_CALLS_OK	Total number of calls completed OK	mqq_tapiok
TOTAL_FLOWS	Total number of flows	mqq_tcall
TOTAL_CALLS_SYNC	Total number of calls completed sync	mqq_tcallsynccomp
TOTAL_CALLS_IO	Total number of calls need I/O	mqq_tcallio
TOTAL_WAIT_MSG	Total number of real GETWAIT	mqq_twaitmsg
TOTAL_SUB_TASKED	Total number of calls switched	mqq_tsubtasked
TOTAL_OPEN	Total number of OPEN	mqq_topen
TOTAL_CLOSE	Total number of CLOSE	mqq_tclose
TOTAL_GET	Total number of GET	mqq_tget
TOTAL_GETWAIT	Total number of GETWAIT	mqq_tgetwait
TOTAL_PUT	Total number of PUT	mqq_tput
TOTAL_PUT1	Total number of PUT1	mqq_tput1
TOTAL_INQ	Total number of INQ	mqq_tinq
TOTAL_SET	Total number of SET	mqq_tset
INDOUBT_UOW	Count of indoubt UOW	mqq_indoubtuow
UNRESOLVED_UOW	Count of unresolved UOWs	mqq_unresolveduow
RESOLVED_COMM	Count of resolved committed UOWs	mqq_resolvecomm
RESOLVED_BACK	Count of resolved backout UOWs	mqq_resolveback
BACKOUT_UOW	Total number of Backout UOWs	mqq_tbackuow
COMMITTED_UOW	Total number of Committed UOWs	mqq_tcommuow
TOTAL_TASK_END	Total number of tasks	mqq_ttaskend
SINGLE_PHASE_COMMIT	Total number of Single Phase Commits	mqq_tspcomm
TWO_PHASE_COMMIT	Total number of Two Phase Commits	mqq_t2pcomm

Table 7-40. MQ Connection Out-of-the-box Business Views		
Business View Name	Description	Metric(s) Used
MQCONN Connection Monitor	Monitor the MQ connection status	CONNECTION_STATUS
MQCONN Tasks Monitor	Monitor the number of current MQ tasks	CURRENT_TASKS

### 7.3.9 MVSTCB Global Performance Statistics

MVSTCB Global performance metrics are listed in Table 7-41.

Table 7-41. MVSTCB Global Performance Metrics		
Metric Name	Description	Origin
CICS_TCBS	Current number of CICS TCBS	dstds_cicstcb_count
CICS_CPU TIME	CPU Time of current attached CICS TCBS	dstds_cicstcb_cputime/1000000
CICS_STG_BELOW	Private storage below 16M	dstds_cicstcb_stg_below
CICS_STG_ABOVE	Private storage above 16M	dstds_cicstcb_stg_above
CICS_STG_BELOW_INUSE	Storage below 16M in use	dstds_cicstcb_stg_below_inuse
CICS_STG_ABOVE_INUSE	Storage above 16M in use	dstds_cicstcb_stg_above_inuse
NONCICS_TCBS	Current number of non-CICS TCBS	dstds_noncicstcb_count
NONCICS_CPU TIME	CPU Time of current attached non-CICS TCBS	dstds_noncicstcb_cputime/1000000
NONCICS_STG_BELOW	Private storage below 16M	dstds_noncicstcb_stg_below
NONCICS_STG_ABOVE	Private storage above 16M	dstds_noncicstcb_stg_above
NONCICS_STG_BELOW_INUSE	Storage below 16M in use	dstds_noncicstcb_stg_below_inuse
NONCICS_STG_ABOVE_INUSE	Storage above 16M in use	dstds_noncicstcb_stg_above_inuse

### 7.3.10 Pipeline Performance Statistics

Pipeline performance metrics are listed in Table 7-42.

Table 7-42. Pipeline Performance Metrics		
Metric Name	Description	Origin
PIR_MODE	Pipeline mode	pir_pipeline_mode
PIR_CONFIG	Pipeline configuration file	pir_configuration_file
PIR_SHELF_DIR	Pipeline shelf directory	pir_shelf_directory
PIR_WSDIR_DIR	Pipeline WSDIR pickup directory	pir_wmdir_directory
PIR_USE_CNT	Pipeline use count	pir_pipeline_use_count

## 7.3.11 Program Autoinstall Performance Statistics

Program Autoinstall performance metrics are listed in Table 7-43.

Table 7-43. Autoinstall Performance Metrics		
Metric Name	Description	Origin
ATTEMPTS	Number of attempts	pggatt
REJECTS	Number of rejects	pggrej
FAILURES	Number failures	pggfail

## 7.3.12 Program Performance Statistics

Program Global performance metrics are listed in Table 7-44 and Program Detail performance metrics are listed in Table 7-45.

Table 7-44. Program Global Performance Metrics		
Metric Name	Description	Origin
LOAD_REQS	Number of LIBRARY load requests	ldgllr
LOAD_TIME	Total time for all load requests	ldgllt
PGM_USES	Number of program uses	ldgpuses
LOAD_REQS_WAITING	Number of loader requests waiting	ldgwlr
LOAD_REQS_WAITING_HWM	HWM of loader requests waiting	ldgwlrhw
TIMES_AT_HWM	Number of times at HWM	ldghwmt
TOT_TIME_WAITING	Total time waiting	ldgttw
LIB_DEB_REBUILDS	Number of LIBRARY DEB rebuilds	ldgdrebs
LOAD_REQS_WAITED	Number of loader requests that waited	ldgwtdlr
SRCH_ORDER_WAITS	Number of load waits due to search order	ldgwsou

Table 7-45. Program Detail Performance Metrics		
Metric Name	Description	Origin
STG_OCCUPIED_NIU	Amount of storage occupied by NIU	ldgstgnu
PGMS_ON_NIU_QUEUE	Number of programs on NIU queue	ldgprognu
PGMS_RECLAIMED	Number of programs reclaimed	ldgregnu
PGMS_REMOVED	Number of programs removed	ldgdpscr
TOT_TIME_ON_NIU_QUEUE	Total time on NIU queue	ldgdpsct

### 7.3.13 Recovery Manager Performance Statistics

Recovery Manager performance metrics are listed in Table 7-46.

<b>Table 7-46. Recovery Manager Performance Metrics</b>		
<b>Metric Name</b>	<b>Description</b>	<b>Origin</b>
TOT_SYNCPTS_FWD	Total syncpoints forward	rmgsy fwd
TOT_SYNCPTS_BWD	Total syncpoints backward	rmgsy bwd
TOT_RESYNC	Total resynchronisations	rmgresyn
TOT_SHUNTED_INDBT	Total shunted UOWS in Indoubt status	rmgtshin
CURR_SHUNTED_INDBT	Current shunted for Indoubt	rmgcs shin
TOT_SHUNTED_ROCMT	Total uows shunted for RO commit fail	rmgtshro
CURR_SHUNTED_ROCMT	Current uows shunts RO commit fail	rmgcs shro
TOT_INDBT_TRANDEF	Total forced Indoubt actions - trandef	rmgiaftr
TOT_INDBT_TIMEOUT	Total forced Indoubt actions - timeout	rmgiafti
TOT_INDBT_NOWAIT	Total forced Indoubt actions - nowait	rmgiafnw
TOT_INDBT_OPER	Total forced Indoubt actions - operator	rmgiafop
TOT_INDBT_OTHR	Total forced Indoubt actions - other	rmgiafot
TOT_INDBT_MISMATCH	Total forced Indoubt action mismatches	rmgiamis
TOT_NOWAIT_TD	Total forced for no waiting in TD	rmgnwtd
TOT_NOWAIT_LU61	Total forced for no waiting in LU61	rmgnw61
TOT_NOWAIT_MRO	Total forced for no waiting in MRO	rmgnwmro
TOT_NOWAIT_RMI	Total forced for no waiting in RMI	rmgnwrmi
TOT_NOWAIT_OTHR	Total forced for no waiting in other	rmgnwoth

### 7.3.14 DSA Storage Performance Statistics

DSA Storage performance metrics are listed in Table 7-47 and out-of-the-box Business Views in Table 7-48.

<b>Table 7-47. DSA Storage Performance Metrics</b>		
<b>Metric Name</b>	<b>Description</b>	<b>Origin</b>
STGPROT	State of STGPROT	smsstgprot
RENTPGM	State of RENTPGM	smsrentpgm
TRANISO	State of TRANISO	smstraniso
DSA_LIMIT	Current DSA limit	smsdsalimit
EDSA_LIMIT	Current EDSA limit	smsedsalimit
DSA_TOTAL	Current DSA total	smsdsatotal
EDSA_TOTAL	Current EDSA total	smsedsatotal
HWM_DSA_TOTAL	HWM DSA total	smshwmdsatotal
HWM_EDSA_TOTAL	HWM EDSA total	smshwmedsatotal
PCT_DSA_USED	Current DSA used percentage	$(\text{smsdsalimit} - \text{smsdsatotal} / \text{smsdsalimit}) * 100$
PCT_EDSA_USED	Current EDSA used percentage	$(\text{smsedsalimit} - \text{smsedsatotal} / \text{smsedsalimit}) * 100$

**Table 7-48. DSA Storage Out-of-the-box Business Views**

Business View Name	Description	Metric(s) Used
DSA Usage Monitor	Monitor the current DSA used percentage	PCT_DSA_USED
EDSA Usage Monitor	Monitor the current EDSA used percentage	PCT_EDSA_USED

### 7.3.15 Log Manager Log Stream Performance Statistics

Log Manager Log Stream performance metrics are listed in Table 7-49.

**Table 7-49. Log Manager Log Stream Performance Metrics**

Metric Name	Description	Origin
CF_STRUCTURE_NAME	CF structure name	lgsstruc
TOT_LOG_QUERIES	Number of log queries	lgsqueries
TOT_LOG_WRITES	Number of log writes	lgswrites
TOT_BYTES_WRITTEN	Total number of bytes written	lgsbytes
CURR_FORCE_WAITERS	Current number of force waiters	lgscurfwtrs
PEAK_FORCE_WAITERS	Peak number of force waiters	lgspeakfwtrs
TOT_FORCE_WAITS	Total number of force waits	lgsstfwait
BUFFER_FULL_WAITS	Number of waits due to buffer full	lgsbufwait
LOG_BRW_STARTS	Number of log browse starts	lgsbrwstrt
LOG_BRW_READS	Number of log browse reads	lgsbrwread
TOT_DELETES	Number of log deletes	lgsdeletes
RETRY_ERRORS	Number of retryable errors	lgsrtyerrs
BUFFER_APPND_REQS	Number of buffer append requests	lgsbufapp

### 7.3.16 Domain Subpool Performance Statistics

Domain Subpool performance metrics are listed in Table 7-50.

**Table 7-50. Domain Subpool Performance Metrics**

Metric Name	Description	Origin
ELEMENT_TYPE	Element type (fixed/variables)	smdetype
ELEMENT_LENGTH	Element length	smdflen
ELEMENT_CHAINING	Element chaining (yes/no)	smdelchn
BOUNDARY	Boundary	smdbndry
LOCATION	Above/below 16 MB line	smdlocn
ACCESS	Access	smdaccess
DSA_INDEX	DSA index	smddsaindex
INITIAL_FREE	Initial free value	smdifree
GETMAIN_REQS	Number of Getmain requests	smdgmreq
FREEMAIN_REQS	Number of Freemain requests	smdfmreq

Metric Name	Description	Origin
TOT_ELEMENT_LENGTH	Total element lengths	smdces
CURR_PAGE_STG	Current page storage	smdcps
CURR_ELEMENTS	Current number of elements	smdcelem
HWM_PAGE_STG	High Water Mark page storage	smdhwmps

### 7.3.17 Task Subpool Performance Statistics

Task Subpool performance metrics are listed in Table 7-51.

Table 7-51. Task Subpool Performance Metrics		
Metric Name	Description	Origin
DSA_LOCATION	Above/below 16 MB line	smtlocn
DSA_ACCESS	Access (CICS/USER)	smtaccess
DSA_INDEX	DSA index	smtsaindex
GETMAIN_REQS	Number of Getmain requests	smtgmreq
FREEMAIN_REQS	Number of Freemain requests	smtfmreq
CURR_ELEMENT_LENGTHS	Total element lengths	smtces
CURR_PAGE_STG	Current page storage	smtcps
CURR_ELEMENTS	Current number of elements	smtcne
HWM_PAGE_STG	High Water Mark page storage	smthwmps

### 7.3.18 Dump Domain Performance Statistics

System Dump performance metrics are listed in Table 7-52 and out-of-the-box Business Views in Table 7-53. Transaction Dump performance metrics are listed in Table 7-54.

Table 7-52. System Dump Performance Metrics		
Metric Name	Description	Origin
SDUMP_TAKEN	Number of system dumps taken	sdrstkn
SDUMP_SUPPRESSED	Number of system dumps suppressed	sdrssupr
TDUMP_TAKEN	Number of transaction dumps taken	sdrttkn
TDUMP_SUPPRESSED	Number of transaction dumps suppressed	sdrtsupr

Table 7-53. System Dump Out-of-the-box Business Views		
Business View Name	Description	Metric(s) Used
System Dump Monitor	Monitor CICS system dumps	SDUMP_TAKEN
Transaction Dump Monitor	Monitor CICS transaction dumps	TDUMP_TAKEN

**Table 7-54. Transaction Dump Performance Metrics**

Metric Name	Description	Origin
SDUMP_TAKEN	Number of system dumps taken	tdrstkn
SDUMP_SUPPRESSED	Number of system dumps suppressed	tdrssupr
TDUMP_TAKEN	Number of transaction dumps taken	tdrttkn
TDUMP_SUPPRESSED	Number of transaction dumps suppressed	tdrtsupr

### 7.3.19 Sockets Global Performance Statistics

Sockets Global performance metrics are listed in Table 7-55 and out-of-the-box Business Views in Table 7-56.

**Table 7-55. Sockets Global Performance Metrics**

Metric Name	Description	Origin
MAX_SOCKETS_LIMIT	Maxsockets limit	sog_maxsockets_limit
CURR_INBND_SOCKETS	Current Inbound sockets	sog_curr_inbound_sockets
PEAK_INBND_SOCKETS	Peak Inbound sockets	sog_peak_inbound_sockets
CURR_OUTBND_SOCKETS	Current Outbound sockets	sog_curr_outb_sockets
PEAK_OUTBND_SOCKETS	Peak Outbound sockets	sog_peak_outb_sockets
CURR_PERS_OUTBND_SOCKETS	Current Persistent Outbound sockets	sog_curr_pers_outb_sockets
PEAK_PERS_OUTBND_SOCKETS	Peak Persistent Outbound sockets	sog_peak_pers_outb_sockets
INBND_SOCKETS_CREATED	Number of Inbound sockets created	sog_inb_sockets_created
OUTBND_SOCKETS_CREATED	Number of Outbound sockets created	sog_outb_sockets_created
OUTBND_SOCKETS_CLOSED	Number of Outbound sockets created	sog_outb_sockets_closed
TIMES_AT_MAX_SOCKETS	Number of times at maxsockets	sog_times_at_max_sockets
DELAYED_AT_MAX_SOCKETS	Total delayed at maxsockets	sog_delayed_at_max_sockets
TIMEDOUT_AT_MAX_SOCKETS	Timeouts while at maxsockets	sog_timedout_at_max_sockets
CURR_DELAYED_AT_MAX_SOCKETS	Current delayed at maxsockets	sog_curr_delayed_at_max
PEAK_DELAYED_AT_MAX_SOCKETS	Peak delayed at maxsockets	sog_peak_delayed_at_max

**Table 7-56. Sockets Global Out-of-the-box Business Views**

Business View Name	Description	Metric(s) Used
IP Max Socket Monitor	Monitor times at max sockets	TIMES_AT_MAX_SOCKETS
IP Timedout at Max Socket	Monitor timedout at max sockets	TIMEDOUT_AT_MAX_SOCKETS

## 7.3.20 Transient Data Performance Statistics

Transient Data Global performance metrics are listed in Table 7-57.

<b>Table 7-57. Transient Data Global Performance Metrics</b>		
<b>Metric Name</b>	<b>Description</b>	<b>Origin</b>
NUM_BUFFERS	Number of buffers	tqganbfa
MAX_BUFFERS_INUSE	Peak containing valid data	tqgamxiu
BUFFER_ACCESSED	Number of times buffer accessed	tqgatnal
PEAK_CONCURRENT_ACCESS	Peak concurrent access	tqgamxal
BUFFER_WAITS	Number of times buffer wait occurred	tqgatnwt
PEAK_BUFFER_WAITS	Peak buffer waits	tqgamxwt
CI_SIZE	Control Interval (CI) size	tqgacisz
CI_NUM	Number of CIs	tqgancis
PEAK_CI_USED	Peak number CIs used	tqgamxci
NUM_NOSPACE	Number of times NOSPACE occurred	tqganosp
WRITES_TO_DS	Number of writes to dataset	tqgactpt
READS_FRM_DS	Number of reads to dataset	tqgactgt
FORMAT_WRITES	Number of formatting writes	tqgactft
IO_ERRORS	Number of I/O errors	tqgactio
NUM_STRINGS	Number of strings	tqgsnsta
STRING_ACCESSED	Number of times string accessed	tqgstnal
PEAK_STRING_ACCESSED	Peak concurrent string accesses	tqgsmxal
STRING_WAITS	Number of times string wait occurred	tqgstnwt
PEAK_STRING_WAITS	Peak string waits	tqgsmxwt
CURR_BUFFER_ACCESS	Current concurrent buffer access	tqgacnal
CURR_BUFFER_WAITS	Current buffer waits	tqgacnwt
CURR_BUFFER_INUSE	Current buffers	tqgacniu
CURR_STRING_ACCESS	Timeouts while at maxsockets	tqgscnal
CURR_STRING_WAITS	Current delayed at maxsockets	tqgscnwt
CI_INUSE	Peak delayed at maxsockets	tqgactci

## 7.3.21 Transaction Manager Performance Statistics

Transaction Manager performance metrics are listed in Table 7-58.

Table 7-58. Transaction Manager Performance Metrics		
Metric Name	Description	Origin
TRANSACTIONS	Number of transactions	xmgnum
MAXTASK	Current MAXTASK value	xmgmxt
ACTIVE_USER_TRANS	Current active user transactions	xmgcat
QUEUED_USER_TRANS	Current queued user transactions	xmgcqt
TIMES_MAXTASK	Number of times at MAXTASK	xmgtamxt
PEAK_ACTIVE_USER_TRANS	Peak active user transactions	xmgpat
PEAK_QUEUED_USER_TRANS	Peak queued user transactions	xmgpqt
TOTAL_ACTIVE_USER_TRANS	Total active user transactions	xmgtat
TOTAL_DELAYED_USER_TRANS	Total delayed user transactions, this does not include those transactions currently queueing	xmgtdt
TOTAL_MXT_WAITTIME	Total time spent waiting by transactions that had to queue for MAXTASK but not including transactions currently queued	xmgtqtme
TOTAL_MXT_QUEUING_WAITTIME	Total time spent by transactions currently queued for MAXTASK	xmgcqtme
TOTAL_TRANS	Total number of transactions at the time of the last reset	xmgtnum

## 7.3.22 Transaction Class Performance Statistics

Transaction Class performance metrics are listed in Table 7-59 and out-of-the-box business views in Table 7-60.

Table 7-59. Transaction Class Performance Metrics		
Metric Name	Description	Origin
ATTACHS	Total attach requests for transactions in this TCLASS	xmctat
PURGED_IMMED	Number of transactions purged immediately because threshold reached	xmcpqi
QUEUED	Number of transactions that had to queue but are no longer queued	xmctq
ACCEPTED_IMMED	Number of transactions accepted immediately	xmcai
ACCEPTED_QUEUING	Number of transactions accepted after queuing	xmcaa
PURGED_QUEUING	Number of transactions purged while queuing	xmcpwq
PEAK_ACTIVE_TRANS	Peak active user transactions	xmcpat
PEAK_QUEUED_TRANS	Peak queued user transactions	xmcpqt
TIMES_MAX_ACTIVE	Number of times at max active task	xmctama
TIMES_PURGE_THRESHOLD	Number of times at purge threshold	xmctapt
CURRENT_ACTIVE_TRANS	Current active user transactions	xmccat

Metric Name	Description	Origin
CURRENT_QUEUED_TRANS	Current queued user transactions	xmccqt
TOTAL_QUEUED_TIME	Total queuing time of those transactions that are no longer queuing	xmctqtme
TOTAL_QUEUING_TIME	Total queuing time of those transactions that are still queuing	xmccqtme

Table 7-60. Transaction Class Out-of-the-box Business Views

Business View Name	Description	Metric(s) Used
Max Task Monitor	Monitor time at max task	TIMES_MAX_ACTIVE
Task Purged Monitor	Monitor tasks purged due to Class Max Task	PURGE_IMMED PURGE_QUEUING

### 7.3.23 Temporary Storage Performance Statistics

Temporary storage performance metrics are listed in Table 7-61 and out-of-the-box business views in Table 7-62.

Table 7-61. Temporary Storage Performance Metrics

Metric Name	Description	Origin
PUT_MAIN_REQS	Number of PUT/PUTQ main storage requests	tsgsta5f
GET_MAIN_REQS	Number of GET/GETQ main storage requests	tsgnmg
PEAK_STORAGE	Peak storage for TS	tsgsta6f
PUT_AUX_REQS	Number of PUT/PUTQ aux storage requests	tsgsta7f
GET_AUX_REQS	Number of GET/GETQ aux storage requests	tsgnag
PEAK_TS_INUSE	Peak TS names in use	tsgqnumh
ENTRIES_IN_HWMQ	Number of entries in longest queue	tsgqinh
QUEUE_CREATED	Number of times queue created	tsgsta3f
CI_SIZE	Control Interval (CI) size	tsgcsz
WRITES_MORETHAN_CIS	Number of writes more than Control Interval	tsgstabf
CI_NUM	Number of CIs in Temporary Storage dataset	tsgnci
PEAK_CI_USED	Peak CIs used	tsgnciah
AUX_EXHAUSTED	Number of times aux storage exhausted	tsgsta8f
TS_BUFFERS	Number of Temporary Storage buffers	tsgnbca
BUFFER_WAITS	Number of Temporary Storage buffer waits	tsgbwtn
PEAK_BUFFER_WAITS	Peak users waiting on buffer	tsgbuwth
BUFFER_WRITES	Number of buffer writes	tsgtwtnt
WRITES_FORCE	Number of writes force for recovery	tsgtwtnt
BUFFER_READS	Number of buffer reads	tsgtrdn
FORMAT_WRITES	Number of format writes	tsgtwtnt
TS_STRINGS	Number of Temporary Storage strings	tsgnvca

Metric Name	Description	Origin
PEAK_STRINGS	Peak Temporary Storage strings used	tsgnvcah
STRING_WAITS	Number of times TS string wait occurred	tsgvwtn
PEAK_STRING_WAITS	Peak users waiting on string	tsgvwth
IO_ERRORS	Number of I/O errors on TS dataset	tsgstaaf
CURR_STG	Current storage for TS	tsgsta6a
COMPRESSIONS	Number of TS compressions	tsgsta9f
CURR_CI_INUSE	Current CIs in use	tsgncia
USR_WAITING_STRING	Number of users waiting on string	tsgvuwt
USR_WAITING_BUFFER	Number of users waiting on buffer	tsgbuwt
TS_NAMES_INUSE	Number of TS names in use	tsgqnum
MAX_AUX_RECLEN	Longest Auxiliary record length	tsglar
BYTES_PER_CI	Number of available bytes per CI	tsgnavb
SEGMENTS_PER_CI	Number of segments per CI	tsgspci
BYTES_PER_SEGMENT	Number of bytes per segment	tsgbpcseg
SHARED_POOLS_DEF	Number of shared pools defined	tsgshpdf
SHARED_POOLS_CON	Number of shared pools connected	tsgshpcn
SHARED_READ_REQS	Number of shared read requests	tsgshrds
SHARED_WRITE_REQS	Number of shared write requests	tsgshwts

**Table 7-62. Temporary Storage Out-of-the-box Business Views**

Business View Name	Description	Metric(s) Used
TS Aux Buffer Monitor	Monitor Temporary Storage Auxiliary buffer usages	AUX_EXHAUSTED
TS Aux CI Monitor	Monitor Temporary Storage Auxiliary CI usages	PEAK_CI_USED CI_NUM
TS Aux String Monitor	Monitor Temporary Storage Auxiliary active strings	PEAK_STRINGS TS_STRINGS
TS Aux Buffer Waits Monitor	Monitor Temporary Storage Auxiliary buffer waits	USR_WAITING_BUFFER
TS Aux String Waits Monitor	Monitor Temporary Storage Auxiliary string waits	USR_WAITING_STRING

## 7.3.24 Web Domain Performance Statistics

Web domain performance metrics are listed in Table 7-63.

Table 7-63. Web Domain Performance Metrics		
Metric Name	Description	Origin
REFERENCE_CNT	Urimap reference count	wbg_urimap_reference_count
MATCH_DISABLED	Urimap host/path match disabled	wbg_urimap_match_disabled
NO_MATCH_CNT	Urimap host/path no match	wbg_urimap_no_match_count
MATCH_CNT	Urimap host/path match	wbg_urimap_match_count
MATCH_REDIRECT	Urimap host/path match redirect	wbg_urimap_match_redirect
MATCH_ANALYZER	Urimap host/path match analyzer	wbg_urimap_match_analyzer
STATIC_CONTENT	Urimap static content	wbg_urimap_static_content
DYNAMIC_CONTENT	Urimap dynamic content	wbg_urimap_dynamic_content
PIPELINE_REQS	Urimap pipeline requests	wbg_urimap_pipeline_reqs
SCHEME_HTTP	Urimap scheme(http) requests	wbg_urimap_scheme_http
SCHEME_HTTPS	Urimap scheme(https) requests	wbg_urimap_scheme_https
HOST_DISABLED	Host disabled count	wbg_host_disabled_count
ATOMSERV_REQS	Urimap atomservice requests	wbg_urimap_atomserv_reqs

## 7.3.25 VTAM Performance Statistics

VTAM performance metrics are listed in Table 7-64.

Table 7-64. VTAM Performance Metrics		
Metric Name	Description	Origin
MAX_RPL	Number of times at RPL max	a03rplx
MAX_RPL_POSTED	Number of Max RPLs posted	a03rplx
VTAM_SOS	Number of VTAM SOS	a03vtsos
DYNAMIC_OPEN	Number of dynamic open count	a03doc
LU_IN_SESSION	Current LUs in session	a03lunum
HWM_LU_IN_SESSION	HWM LUs in session	a03luhwm
PRSS_INQUIRE	PRSS inquire count	a03psic
PRSS_NIB	PRSS nib count	a03psnc
PRSS_OPNDST	PRSS opndst count	a03psoc
PRSS_UNBIND	PRSS unbind count	a03psuc
PRSS_ERROR	PRSS error count	a03psec

## 7.3.26 Pipeline Domain Performance Statistics

Pipeline Domain (Webservice) performance metrics are listed in Table 7-65.

Table 7-65. Pipeline Domain Performance Metrics		
Metric Name	Description	Origin
PGM_INTERFACE	Webservice program interface	piw_program_interface
MSG_VALIDATION	Webservice msg validation	piw_msg_validation
PIPELINE_NAME	Webservice pipeline name	piw_pipeline_name
URIMAP_NAME	Webservice urimap name	piw_urimap_name
WSBIND_FILE	Webservice WSBIND file	piw_wsbind_file
WSDL_FILE	Webservice WSDL file	piw_wsdl_file
WSDL_BINDING	Webservice WSDL binding	piw_wsdl_binding
ENDPOINT_URI	Webservice ENDPOINT URI	piw_endpoint_uri
PGM_NAME	Webservice program name	piw_webservice_program
CONTAINER_NAME	Webservice container name	piw_container_name
USE_CNT	Webservice use count	piw_webservice_use_count

## 7.4 z/OS

You can use z/OS performance metrics collected by zExpert agent to create business views that monitor specific situations in your z/OS environment. zExpert agent provides the following performance metrics for z/OS:

- Started Tasks Performance Statistics ([section 7.4.1](#))

### 7.4.1 Started Tasks Performance Statistics

Started Tasks performance metrics are listed in Table 7-66.

Table 7-66. Started Tasks Performance Metrics		
Metric Name	Description	Origin
STEPNAME	Job step name	chstep or chkey
PROCNAME	Procedure name	chprocsn or chcls
JOBID	JES job number	Jsabjbid or chkey
USERID	User ID of job creator	jsabusid
AS_POSITION	Address space position	oucbsfl
DISP_PRIORITY	Dispatching Priority	ascbdp
REAL_STG	Real storage in 4K frames	raxfmct
ASID	ASID	ascbasid
ASIDX	ASID (hex format)	ascbasid
EXCP_COUNT	EXCP count	ascbiosc
CPU_TIME	Captured CPU time	r792ejst
SWAP_REASON	Swap out reason	oucbsrc

WORKLOAD_NAME	Workload name	r792wkld
SERVICE_CLASS	Service Class name	r792scl
MEM_LIMIT	Memory limit	

## 7.4.2 Console Metrics (SyslogD Header Format)

Table 7-67. z/OS Console Metrics (SyslogD Header Format)		
Metric Name	Description	Origin
TIMESTAMP	Time message issued (in T/Z Format)	WQE_Issued_ETOD
HOSTNAME	Hostname of active system	ECVTSPLX-CVTSNAME
APP-NAME	Application Name (Jobname)	WQEOJBNM or null
PROCID	Process ID (Job Identifier)	WQEOJBID or null
MSGID	Message Identifier	First blank terminated string extracted from WQETXT

## 7.4.3 Console Metrics (SyslogD Structured Data Format)

Table 7-68. z/OS Console Metrics (SyslogD Structured Data Format)		
Metric Name	Description	Origin
SD-ID	Structured Data Identifier	Fixed value: 'zXpert@1796'
SYSID	Active LPAR Identifier	ECVTSPLX-CVTSNAME
TYPE	Indicates Console Message	Fixed value: 'CONSOLE'
SUBTYPE	Job Type	Extracted from WQEJOBID
RESOURCE	Message ID as extracted for metric MSGID	MSGID
MSG_DATE	Date message was issued	WQEDATE
MSG_TIME	Time message was issued	WQETS
SEQID	Message Sequence Identifier – System ID	WQESYSID
SEQNO	Message Sequence Identifier – Sequence Number	WQESEQN
ASIDX	Address Space Identifier in Hexadecimal	WQEASID
MSG_DESC	Message Descriptor	WQEDESCD – possible values: SYSFAIL IMMEDACTREQ EVNTLACTREQ SYSSTATUS IMMEDCMDRESP JOBSTATUS TASKRELATED

		OUTOFLINE
		OPERREQ
		RSRVD_10
		CRTEVNTLACTREQ
		IMPORTINFO
		AUTOMATIONINFO
		RSRVD_14
		RSRVD_15
		RSRVD_16
MSG_ROUTE	Message Routing Codes	WQEERC – Possible values:
		PRICONSLACT
		PRICONSLINF
		TAPEPOOL
		DASDPOOL
		TAPELIB
		DASDLIB
		UNITRECPOOL
		TPCNTL
		SYSSECURITY
		SYSERRMAINT
		PGMRINFO
		EMULATORINF
		USER_13
		USER_14
		USER_15
		USER_16
		USER_17
		USER_18
		USER_19
		USER_20
		JES_21
		JES_22
		JES_23
		JES_24
		JES_25

	JES_26
	JES_27
	JES_28
	DISASTRRCVY
	RSRVD_30
	RSRVD_31
	RSRVD_32
	RSRVD_33
	RSRVD_34
	RSRVD_35
	RSRVD_36
	RSRVD_37
	RSRVD_38
	RSRVD_39
	RSRVD_40
	JOBSTATUS
	JESGENINF
	JES_43
	JES_44
	JES_45
	JES_46
	JES_47
	JES_48
	JES_49
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		DEVICE_104
		DEVICE_105
		DEVICE_106
		DEVICE_107
		DEVICE_108
		DEVICE_109
		DEVICE_110
		DEVICE_111
		DEVICE_112
		DEVICE_113
		DEVICE_114
		DEVICE_115
		DEVICE_116
		DEVICE_117
		DEVICE_118
		DEVICE_119
		DEVICE_120
		DEVICE_121
		DEVICE_122
		DEVICE_123
		DEVICE_124
		DEVICE_125
		DEVICE_126
		DEVICE_127
		DEVICE_128

## 7.4.4 Console Metrics (SyslogD Message)

The Message part as defined by RFC 5424 contains the Byte Order Mask characters followed by the contents of the WQETXT. Minor Messages, as defined by z/OS, are concatenated with Major Messages to a single message for analysis.

<b>Table 7-69. z/OS Console Metrics (SyslogD Message)</b>		
<b>Metric Name</b>	<b>Description</b>	<b>Origin</b>
TIMESTAMP	Time message issued (in T/Z Format)	WQE_Issued_ETOD

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# Appendix A: References

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## A.1 Nastel Documentation

Table A-1. Nastel Documentation	
Document Number (or higher)	Title
M6/INS 600.008	<i>AutoPilot® M6 Installation Guide</i>
M6/USR 600.019	<i>AutoPilot® M6 Administrator's Guide</i>

## A.2 IBM MQ Documentation

Use the following links for IBM MQ documentation.

[IBM WebSphere MQ Version 7.1 documentation](#)

[IBM WebSphere MQ Version 7.5 documentation](#)

[IBM MQ \(formerly IBM WebSphere® MQ\) Version 8.0 documentation](#)

[IBM MQ Version 9.0 documentation](#)

[IBM MQ Version 9.1 documentation](#)

Additional IBM publications can be found in the IBM Publications Center. Click the following link and select your country. On the page that follows, select **Search for Publications** to get to the documentation search page.

<https://www.ibm.com/shop/publications/order>

## A.3 Nastel SAMP Library Cross Reference

NZADEFS	- Provides the CICS definitions for the CSD to create the NSMI transaction.
NZAINI00	- zExpert Agent initialization file.
CSCONF00	- zExpert Console Interface configuration file
XPCONF00	- zExpert Nodes configuration file
ZXPCOL00	- zExpert Data Collector definitions for all resource managers (MQ, CICS, DB2, z/OS)
ZXPCOLCI	- zExpert Data Collector definitions for CICS/TS
ZXPCOLMQ	- zExpert Data Collector definitions for z/OS IBM MQ
ZXPCOLD2	- zExpert Data Collector definitions for z/OS DB2
ZXPCOLZO	- zExpert Data Collector definitions for z/OS
CSMSGF00	- zExpert Console Interface message filters

## A.4 Nastel JCL Library Cross Reference

DFHCSDUP	- Sample JCL to install the Nastel CICS transaction NSMI and NSTEXCI.
NSNZAAS	- Sample JCL to create the Nastel zExpert Agent environment.

## A.5 zExpert Data Collectors

There are three data collectors:

- getWMQStats – See [Table A-3](#)
- getDB2Stats – See [Table A-4](#)
- getCICSStats – See [Table A-5](#)
- getJESSpool – See [Table A-6](#)

<b>Statistics Name</b>	<b>Interval</b>	<b>Type</b>
Buffer_Manager	00:05:00	WMQ
CF_Manager	00:05:00	WMQ
DB2_Manager	00:05:00	WMQ
Data_Manager	00:05:00	WMQ
Log_Manager	00:05:00	WMQ
Lock_Manager	00:05:00	WMQ
Message_Manager	00:05:00	WMQ
Storage_Manager	00:05:00	WMQ
Topic_Manager	00:05:00	WMQ
Page_Sets	00:05:00	WMQ

<b>Table A-4. Data Collector – getDB2Stats</b>		
<b>Statistics Name</b>	<b>Interval</b>	<b>Type</b>
Buffer_Manager	00:05:00	DB2
Data_Manager	00:05:00	DB2
Log_Manager	00:05:00	DB2
Storage_Manager	00:05:00	DB2
Service_Controller	00:05:00	DB2
RDS	00:05:00	DB2

<b>Table A-5. Data Collector – getCICSStats</b>		
<b>Statistics Name</b>	<b>Interval</b>	<b>Type</b>
STORAGE	00:05:00	CICS
MQCONN	00:05:00	CICS
DB2CONN	00:05:00	CICS
MVSTCB	00:05:00	CICS
TRANSACTION	00:05:00	CICS
TRANCLASS	00:05:00	CICS

<b>Table A-6. Data Collector – getJESSpool</b>		
<b>Statistics Name</b>	<b>EOD Retry</b>	<b>Type</b>
<i>sysid.SYSLOG.SYSTEM</i>	00:05:00	JES2
<i>jobname.ddname</i>	00:05:00	JES2

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# Appendix B: Conventions

## B.1 Typographical Conventions

Table B-1. Typographical Conventions	
Convention	Description
<a href="#">Blue/Underlined</a>	Used to identify links to referenced material or websites. Example: <a href="mailto:support@nastel.com">support@nastel.com</a>
<b>Bold Print</b>	Used to identify topical headings, glossary entries, and toggles or buttons used in procedural steps. Example: Click <b>EXIT</b> .
<i>Italic Print</i>	Used to place emphasis on titles, menus, screen names, user inputs, or other categories.
<b>Monospaced Bold</b>	Used to identify keystrokes/data entries, file names, directory names, etc.
<i>Monospaced Italic</i>	Used to identify variables in an address location. Example: [ <i>AutoPilot_Home</i> ]\documents, where the portion of the address within the brackets [ ] is variable.
Monospaced Text	Used to identify addresses, commands, scripts, etc.
Normal Text	Typically used for general text throughout the document.
Table Text	Table text is generally a smaller size to conserve space. 10, 9, and 8 point type are used in tables throughout the AutoPilot M6 product family of documents.

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# Glossary

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This appendix contains a list of reference material and documents relevant to M6/TM and other related Nastel products.

**ALET:** Access-List Entry Token

**APF:** *see* Authorized Program Facility

**Authorized Program Facility (APF):** A facility that permits the identification of programs that are authorized to use restricted functions.

**AutoPilot M6:** Nastel Technologies' Enterprise Application Management Platform. AutoPilot M6 is designed to monitor and control distributed IT services such as application servers, middleware, user applications, workflow engines, brokers, Service Oriented Architecture (SOA) and Enterprise Service Bus (ESB) based applications and their impact on business services.

**AutoPilot M6 Web:** AutoPilot M6 Web is a browser-based interface that provides monitoring and operational control over managed resources and applications. It allows users to monitor health, recover from a failure, view historical performance graphs and visualize impacts of a failure.

**BSV:** *see* Business Views

**Business View (BSV):** A collection of rules that define a desired state of an eBusiness environment. Business Views can be tailored to present information in the form most suited to a given user, as defined by the user.

**CEP Servers:** Containers that are capable of hosting any number of AutoPilot services; such as experts, managers, policies etc.

**CICS:** *see* Customer Information Control System

**CICS System Definition Data set:** A virtual storage access method key sequenced dataset cluster that contains a resource definition record for every record defined to CICS using resource definition online.

**Client:** Any programming component that uses the AutoPilot infrastructure; for example, the AutoPilot Console.

**Common Object Request Broker Architecture (CORBA):** A Common Object Request Broker Architecture (CORBA) object can be invoked from a Web browser using CGI scripts or applets.

**Console:** The console acts as the graphical interface for AutoPilot.

**Contacts:** A subordinate to a given Manager or Expert.

**CORBA:** *see* Common Object Request Broker Architecture.

**CSD:** *see* CICS System Definition Data set.

**Customer Information Control System (CICS):** an IBM licensed program that provides on-line transaction processing services and management for business applications.

**Data Source Name:** A Data Source Name (DSN) is the logical name that is used by Open Database Connectivity (ODBC) to refer to the drive and other information that is required to access data. The name is used by Internet Information Services (IIS) for a connection to an ODBC data source - for example: Microsoft SQL Server database. The ODBC tool in Control Panel is used to set the DSN. When ODBC DSN entries are used to store the connection string values externally, you simplify the information that is needed in the connection string. This makes changes to the data source completely transparent to the code itself.

**Data Space:** A range of up to two gigabytes of contiguous virtual storage addresses that a program can directly manipulate. Unlike an address space, a data space can hold only data; it does not contain common areas or system data or programs.

**Deploy:** To put to use, to position for use or action.

**Domain Server:** The domain server is a specialized CEP Server that maintains the directory of CEP servers, experts etc. The domain server is also capable of hosting experts, managers etc.

**DSN:** *see* Data Source Name

**DSS:** *see* Decision Support System

**EOD:** End of data

**ESTAEX:** *see* Extended Specify Task Abnormal Exit

**EVT:** Event Log file extension (for example: `sample.evt`)

**Event:** An *Event* is something that happens to an object. Events are logged by AutoPilot and are available for use by AutoPilot Policies or the user.

**Expert:** Services that monitor specific applications such as an applications server, web-server or specific components within the applications (Example, channels in MQSeries). Experts generate facts.

**Extended Specify Task Abnormal Exit (ESTAEX):** A z/OS macro that provides recovery capability and gives control to the user-specified exit routine for processing, diagnosing an abend, or specifying a retry address.

**Fact:** Single pieces of data that has a unique name and value. One or more facts are used to determine the health of the object, application or server.

**Graphical User Interface (GUI):** A type of environment that represents programs, files, and options by means of icons, menus, and dialog boxes on the screen. The user can select and activate these options by pointing and clicking with a mouse or, often, with the keyboard. Because the graphical user interface provides standard software routines to handle these elements and report the user's actions (such as a mouse click on a particular icon or at a particular location in text, or a key press); applications call these routines with specific parameters rather than attempting to reproduce them from scratch.

**GUI:** *see* Graphical User Interface.

**HAQS:** *see* High Availability Queuing Service

**High Availability Queuing Service (HAQS):** HAQS is a component of AutoPilot consisting of two policies that provide automatic queue fail-over for IBM MQ applications, provide high availability of IBM MQ resources such as queues and channels, and ensure automatic recovery of IBM MQ channels

**IIS:** *See* Internet Information Services

**Independent Software Vendor (ISV):** A business term for companies specializing in making or selling software, usually for niche markets.

**Initial Program Load (IPL):** The process of loading system programs and preparing a system to run applications.

**Interactive System Productivity Facility (ISPF):** An IBM licensed program that serves as a full-screen editor and dialog manager. Used for writing application programs. It provides a means of generating standard screen panels and interactive dialogues between the application programmer and terminal user.

**Internet Information Services:** Microsoft's brand of Web server software, utilizing HTTP to deliver World Wide Web documents. It incorporates various functions for security, allows CGI programs, and also provides for Gopher and FTP services

**IPL:** *see* Initial Program Load

**ISPF:** *see* Interactive System Productivity Facility

**ISV:** *see* Independent Software Vendor

**Java:** A platform-independent, object-oriented programming language developed and made available by Sun Microsystems

**Java Database Connectivity (JDBC):** The JDBC API provides universal data access from the Java programming language. Using the JDBC 2.0 API, you can access virtually any data source, from relational databases to spreadsheets and flat files. JDBC technology also provides a common base on which tools and alternate interfaces can be built. The *JDBC Test Tool* that was developed by Merant and Sun Microsystems may be used to test drivers, to demonstrate executing queries and getting results, and to teach programmers about the JDBC API.

**Java Developer's Kit (JDK):** A set of software tools developed by Sun Microsystems, Inc., for writing Java applets or applications. The kit, which is distributed free, includes a Java compiler, interpreter, debugger, viewer for applets, and documentation.

**Java Management Extensions (JMX):** The Java Management Extensions (JMX) technology is an open technology for management and monitoring that can be deployed wherever management and monitoring are needed. By design, this standard is suitable for adapting legacy systems, implementing new management and monitoring solutions and plugging into those of the future.

**Java Naming and Directory Interface (JNDI):** Unified interface to multiple naming and directory services for applications based on Java technology.

**Java Server Pages (JSP):** JSP technology enables rapid development of web-based applications that are platform independent. Java Server Pages technology separates the user interface from content generation enabling designers to change the overall page layout without altering the underlying dynamic content.

**Java Virtual Machine (JVM):** The “virtual” operating system that JAVA-written programs run Java Servlet technology. The JVM is a hardware- and operating system-independent abstract computing machine and execution environment. Java programs execute in the JVM where they are protected from malicious programs and have a small compiled footprint.

**JCL:** *see* Job Control Language

**JDBC:** *see* Java Database Connectivity.

**JDK:** *see* Java Developer's Kit.

**JMX:** *see* Java Management Extensions

**JNDI:** *see* Java Naming and Directory Interface

**Job Control Language (JCL):** A control language that is used to identify a job to an operating system and to describe the job's requirements.

**JRE:** JAVA Run-time Environment. The minimum core JAVA required to run JAVA Programs

**JSP:** *see* Java Server Pages

**JVM:** *see* JAVA Virtual Machine.

**Manager:** Managers are the home or container for policies. All business views must reside on managers, and manager must be deployed prior to deploying a business view or policy.

**Message-Oriented Middleware (MOM):** Message-oriented middleware (MOM) is a client/server infrastructure that increases the interoperability, portability, and flexibility of an application by allowing the application to be distributed over multiple heterogeneous platforms.

**Message Queue Interface (MQI):** Part of IBM's Networking Blueprint. It is a method of program-to-program communication suitable for connecting independent and potentially non-concurrent distributed applications.

**MOM:** *see* Message-Oriented Middleware.

**MQControl:** Nastel Technologies' MQSeries management product. Re-designated as AutoPilot/MQ with release 4.0, prior releases retain the MQControl trademark.

**MQI:** *see* Message Queue Interface

**MQSeries:** IBM's message queuing product. Formerly known as WebSphere MQ. It is currently known as IBM MQ.

**Multiple Virtual Storage (MVS):** *see* z/OS

**MVS:** *see* z/OS

**Naming Service:** A common server records “names” of objects and associates them with references, locations and properties.

**Object Request Broker (ORB):** In object-oriented programming, software that serves as an intermediary by transparently enabling objects to exchange requests and responses.

**ORB:** *see* Object Request Broker.

**Orbix:** CORBA product distributed by IONA Technologies.

**Package Manager:** The command line utility that allows users to list, install, uninstall, verify, and update AutoPilot installation on any CEP Server.

**PKGMAN:** *see* Package Manager Utility included in AutoPilot products.

**Policy/Business Views:** Business views are a collection of one or more sensors. Business views are used to visually present the health and status of the different systems as well as automatically issue remedial actions.

**SDSF:** Screen Display and Search Facility

**Sensor:** A rule that is used to determine the health of an object or application based on one or more facts. Actions can then be issued, based on health.

**Service Level Agreement (SLA):** A formal written agreement made between two parties: the service provider and the service recipient. The SLA itself defines the basis of understanding between the two parties for delivery of the service itself. The document can be quite complex, and sometimes underpins a formal contract. The contents will vary according to the nature of the service itself, but usually includes a number of core elements, or clauses.

**Simple Mail Transfer Protocol (SMTP):** A TCP/IP protocol for sending messages from one computer to another on a network. This protocol is used on the Internet to route e-mail. *See also* communications protocol, TCP/IP. *Compare* CCITT X series, Post Office Protocol.

**SIP:** System Initialization Parameters

**SLA:** *see* Service Level Agreement

**SMTP:** *see* Simple Mail Transfer Protocol

**Started Task (STC):** Unlike a Batch Job, a Started Task is not scheduled and managed by the Job Entry Subsystem; upon issuance of the Start Command, an address space is created and the associated processes are started immediately. The UNIX equivalent of a started task is a daemon.

**STC:** *see* Started Task

**Task Control Block (TCB):** In z/OS, a control block used to maintain information about a single dispatchable unit of work. A number of TCBs may exist within an address space.

**TCB:** Task Control Block

**TCP/IP:** *see* Transmission Control Protocol/Internet Protocol.

**Time Sharing Option (TSO):** An option of the z/OS operating system that provides interactive time sharing from remote terminals.

**Transmission Control Protocol/Internet Protocol (TCP/IP):** A protocol developed by the Department of Defense for communications between computers. It is built into the UNIX system and has become the de facto standard for data transmission over networks, including the Internet.

**TSO:** *see* Time Sharing Option

**Virtual Machine:** Software that mimics the performance of a hardware device, such as a program that allows applications written for an Intel processor to be run on a Motorola chip. *Also See* Java Virtual Machine.

**WebSphere MQ:** IBM's message queuing product. Formerly known as IBM MQSeries. It is currently known as IBM MQ.

**Websphere\_MQ\_Manager:** A specialized AutoPilot manager capable of hosting one or more MQSeries specific policies, apart from the regular policies.

**Wireless Application Protocol (WAP):** An open global specification that is used by most mobile telephone manufacturers. WAP determines how wireless devices utilize Internet content and other services. WAP enables devices to link diverse systems contents and controls.

**WLM:** *see* Workload Manager

**Workload Manager:** A component of z/OS that provides the ability to manage the computing system from a Business View perspective.

**Write to Operator (WTO):** An optional user-coded service that allows a message to be written to the system console operator informing the operator of errors and unusual system conditions that may need to be corrected.

**WTO:** *see* Write to Operator.

**z/OS:** Formally known as MVS and OS/390, IBM z/OS is a widely-used mainframe operating system.

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