z/OS Introduction and Workshop

Components, Messages, and SYSLOG
Unit Objectives

After completing this unit, you should be able to:
• Describe format of z/OS messages
• Describe component identifier
• Describe difference between base ‘elements’ and optional ‘features’
• Describe SYSLOG format
Messages

The ability to read and interpret messages is an important skill within any operating system environment.

z/OS messages follow a format which enables an experienced technician to quickly identify who wrote the message and why the message was written.

Messages provide the ability to assess the status of the operating system, optional software products and applications.
z/OS is a collection of components

Each **component** is a **collection of modules**

**Base** components are always included in the operating system

Base components are also known as base ‘**elements**’ which deliver essential operating system functions.

**Optional** components are installed in addition to the base components

Optional components are also known as ‘**features**’ which are requested separately from the base operating system ‘**elements**’
z/OS is a collection of components

A **unique 3 characters** are assigned to individual components

**IKJ** (TSO, Time Sharing Option)

**Module names** of a component are prefixed by **unique 3 characters**

**IKJEFT01** (TSO terminal monitor program)

**Message** written by a component module begins with the same **unique 3 characters**

**IKJ56646I** (IKJEFT01 message)

The same **message format** is used by both the base components and optional components with very few exceptions. The message format helps isolate and solve problems. The message format is divided into three parts:

1. **reply** identifier (optional)
2. **message identifier**
3. **message text**
z/OS Format of the Message Body

Message body consists of three parts:

1. reply identifier (optional), a number
2. message identifier
3. message text

The following formats are possible:

1  2  3

- id CCCnnn  text
- id CCCnnns  text  CCC – component
- id CCCnnnns  text  S – subcomponent
- id CCCnnnnns  text  n – unique message number
- id CCCSnnns  text  s – type code (a, e, i, w)

  a – action, e – eventual, i – information, w – warning
z/OS Format of the Message Body

id CCCnnn text
id CCCnnns text
id CCCnnnns text
id CCCnnnnns text
id CCCSnnns text

Id  reply identifier: It is optional. It appears if an operator reply is required. The operator specifies it in the reply.

CCCnnn, CCCnnns, CCCnnnns, CCCnnnnns, CCCSnnns

**Message identifier.**

CCC - prefix to identify the component, subsystem, or product that produced the message.
The prefix is three characters.

S - subcomponent identifier, which is an optional addition to the prefix to identify the subcomponent that produced the message. The subcomponent identifier is one character.

nnn, nnnn, nnnnn - serial number to identify the individual message.
The serial number is three, four, or five decimal digits.

s - optional type code, which is one of the following:
A  Action: The operator must perform a specific action.
D  Decision: The operator must choose an alternative.
E  Eventual action: The operator must perform action when time is available.
I  Information: No operator action is required.
S  Severe error: Severe error messages are for a system programmer.
T  Terminate: The IEBCOPY program terminates.
W  Wait: Processing stops until the operator performs a required action.

**text**  The text provides information, describes an error, or requests an operator action.
z/OS Format of the Message Body

CCCnnns  text

IKJ144I  UNDEFINED USERID(S)

CCC – component (IKJ)
S – subcomponent (none)
n – unique message number (144)
s – type code (I – Information)
What is the System Log (SYSLOG)?

The system log (SYSLOG) is a chronological listing of messages about z/OS system activity and other major middleware software products using z/OS services (such as TSO, CICS, DB2, WebSphere, etc.)

Write informational, warning, error and action messages to SYSLOG

The output of system commands are written to SYSLOG

When an unexpected system problem occurs, the SYSLOG is the first place to look to gather information about the problem
System Log (SYSLOG) Format?

Each SYSLOG entry has the following format:

tcrrrrrrr sysname yyddd hh:mm:ss.th ident msgflags < message id – message text >

t  record type (single line, multiple line, or reply required)

c  system command (input, response or internal)

rrrrrrr routing code for console messages
SYSLOG Format  \((tcrrrrrr)\)

**t** - first character indicates the record type:
- D - Data line of a multiple-line message; this line may be the last line of the message.
- E - End line or data-end line of a multiple-line message.
- L - Label line of a multiple-line message.
- M - First line of a multiple-line message.
- N - Single-line message that does not require a reply.
- O - Operator LOG command.
- S - Continuation of a single-line message or a continuation of the first line of a multi-line message. This continuation may be required because of the record length for the output device.
- W - A message that requires a reply.
- X - A log entry that did not originate with a LOG command or a system message.

**c** - second character indicates whether the line was generated because of a command:
- C - Command input.
- R - Command response.
- I - Command issued internally. The job identifier contains the name of the internal issuer. blank - Neither command input nor command response.

**rrrrrr** - routing codes
SYSLOG Format Example

I tells SDSF to pass command to z/OS for execution
### SYSLOG Format Example

I tells SDSF to pass command to z/OS for execution.

<table>
<thead>
<tr>
<th>Display</th>
<th>Filter</th>
<th>View</th>
<th>Print</th>
<th>Options</th>
<th>Search</th>
<th>Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>SDSF SYSLOG</td>
<td>266.101 SOW1 SOW1 02/14/2017 OW</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMMAND INPUT</td>
<td>===&gt; /d iplinfo</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<p>| | | | | | | |</p>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ER</td>
<td>661 00000090</td>
<td>HASP003 MATCH</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M 000000 SOW1</td>
<td>17045 07:50:56.46</td>
<td>00000090</td>
<td>HASP249 COMMAND RECEIVE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>662 00000090</td>
<td>OT(1-9999)</td>
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<td></td>
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<tr>
<td>MR0000000 SOW1</td>
<td>17045 07:50:56.46 INTERNAL 00000090</td>
<td>HASP003 RC=(52),O 663</td>
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<tr>
<td>DR</td>
<td>663 00000090</td>
<td>HASP003 RC=(52),O T(1-9</td>
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<tr>
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<td>663 00000090</td>
<td>HASP003 MATCH</td>
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<td></td>
</tr>
<tr>
<td>M 000000 SOW1</td>
<td>17045 07:50:56.58</td>
<td>00000090</td>
<td>HASP249 COMMAND RECEIVE</td>
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<td></td>
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<tr>
<td>E</td>
<td>664 00000090</td>
<td>POJOBQ,READY,Q=W</td>
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<td></td>
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<tr>
<td>NR0000000 SOW1</td>
<td>17045 07:50:56.58 STC00336 00000090</td>
<td>HASP686 OUTPUT(BPXAS)</td>
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<td>NR0000000 SOW1</td>
<td>17045 07:50:56.58 STC00338 00000090</td>
<td>HASP686 OUTPUT(SMFDUMPS</td>
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<td>NR0000000 SOW1</td>
<td>17045 07:50:56.58 STC00342 00000090</td>
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<td>NR0000000 SOW1</td>
<td>17045 07:50:56.58 STC00343 00000090</td>
<td>HASP686 OUTPUT(SMFDUMPS</td>
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<tr>
<td>M 0000000 SOW1</td>
<td>17045 07:50:56.59</td>
<td>00000090</td>
<td>HASP249 COMMAND RECEIVE</td>
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</tr>
</tbody>
</table>
SYSLOG Format Example

SDSF SYSLOG 266.101 SOW1 SOW1 02/14/2017 OW 4.846 COLUMNS 02-81
COMMAND INPUT ==> SCROLL ==> CSR
NC0000000 SOW1 17045 08:44:38.40 ZIBM050 00000290 D IPLINFO
MR0000000 SOW1 17045 08:44:38.40 ZIBM050 00000090 IEE254I 08.44.38 IPLINF
DR 698 00000090 SYSTEM IDLED AT 13.50.3
DR 698 00000090 RELEASE z/OS 02.02.00
DR 698 00000090 USED LOADWI IN SYS1.IPL
DR 698 00000090 ARCHLVL = 2 MTLSHARE
DR 698 00000090 IEASYM LIST = (W1.SY.VN
DR 698 00000090 IEASYS LIST = (C0.LY.SY
DR 698 00000090 IODF DEVICE: ORIGINAL(0
ER 698 00000090 IPL DEVICE: ORIGINAL(01

******************************************************************************

F11 or right command to shift right

SDSF SYSLOG 266.101 SOW1 SOW1 02/14/2017 OW 4.846 COLUMNS 52-131
COMMAND INPUT ==> SCROLL ==> CSR
---+---6---+---7---+---8---+---9---+---0---+---1---+---2---+---3---
0290 D IPLINFO
0090 IEE254I 08.44.38 IPLINFO DISPLAY 698
0090 SYSTEM IDLED AT 13.50.34 ON 02/13/2017
0090 RELEASE z/OS 02.02.00 LICENSE = z/OS
0090 USED LOADWI IN SYS1.IPLPARM ON 00CE3
0090 ARCHLVL = 2 MTLSHARE = N
0090 IEASYM LIST = (W1.SY.VN
0090 IEASYS LIST = (C0.LY.SY.VN) (OP)
0090 IODF DEVICE: ORIGINAL(00CE3) CURRENT(00CE3)
0090 IPL DEVICE: ORIGINAL(01000) CURRENT(01000) VOLUME(VIMYSB)
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Documentation and Information

MVS System Messages
Unit summary

Having completed this unit, you should be able to:

✓ Describe format of z/OS messages
✓ Describe component identifier
✓ Describe difference between base ‘elements’ and optional ‘features’
✓ Describe SYSLOG format