



MQ Security for z/OS

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Abstract

This session will look at how basic security setup for MQ on z/OS .

How it is activated / deactivated.

What can be protected.

My opinions and not of my company

Agenda

MQ Overview

Security Overview

Controlling Security for MQ for z/OS

Access Control / Administration Summary

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MQ Overview

MQ – Message Queue

xxxxMSTR – MQ queue manager – xxxx equal ssid defined in
SYS1.PARMLIB(IEFSSNxx)

xxxxCHIN – MQ channel initiator

MQ web server

MQ Overview

```
%CSQ1 DISPLAY CHINIT
```

```
CSQM137I %CSQ1 CSQMDDQM DISPLAY CHINIT COMMAND ACCEPTED
```

```
CSQX830I %CSQ1 CSQXRDQM Channel initiator active
```

```
CSQX831I %CSQ1 CSQXRDQM 8 adapter subtasks started, 8 requested
```

```
CSQX832I %CSQ1 CSQXRDQM 5 dispatchers started, 5 requested
```

```
CSQX833I %CSQ1 CSQXRDQM 0 SSL server subtasks started, 0 requested
```

```
CSQX840I %CSQ1 CSQXRDQM 0 channels current, maximum 200
```

```
CSQX841I %CSQ1 CSQXRDQM 0 channels active, maximum 200, 498
```

```
including 0 paused
```

```
CSQX842I %CSQ1 CSQXRDQM 0 channels starting, 499
```

```
0 stopped, 0 retrying
```

```
CSQX836I %CSQ1 CSQXRDQM Maximum channels - TCP/IP 200, LU 6.2 200
```

```
CSQX845I %CSQ1 CSQXRDQM TCP/IP system name is TCPIP
```

```
CSQX846I %CSQ1 CSQXRDQM TCP/IP listener INDISP=QMGR started, 502
```

```
for port 1400 address *
```

```
CSQX849I %CSQ1 CSQXRDQM LU 6.2 listener INDISP=QMGR not started
```

```
CSQ9022I %CSQ1 CSQXCRPS ' DISPLAY CHINIT' NORMAL COMPLETION
```

MQ Overview

- Connections
- Commands
- Queues
- Queue context
- Alternate userid
- Topics
- Processes
- Namelists

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MQ Security Overview – RACF classes

- MQ Member (Group) Upper Case Classes

- *MQADMIN (GMQADMIN)*
- *MQQUEUE (GMQQUEUE)*
- *MQPROC (GMQPROC)*
- *MQNLIST (GMQNLIST)*
MQCONN
- *MQCMDS*

- Only will talk to upper case classes

- MQ Member (Group) Mixed Case Classes

- *MXADMIN (GMXADMIN)*
- *MXQUEUE (GMXQUEUE)*
- *MXPROC (GMXPROC)*
- *MXNLIST (GMXNLIST)*
- *MXTOPIC (GMXTOPIC)*

- No versions of MX for MQCONN and MQCMDS

MQ Security Overview – RACF Classes

- MQADMIN
 - Administrative control
 - Alternate user profiles
 - Context control
 - RESLEVEL
 - Switch

- MQCONN - Connections
- MQCMDS - Commands
- MQQUEUE - Queues
- MXTOPIC - Topics
- MQPROC - Processes
- MQNLIST - Namelists

MQ Security Overview – Check list

- Activate and RACLIST the RACF MQADMIN class.
- Check your switch settings.
- Do you need security on any of the following:
 - Connections
 - Checking on command
 - Resource used in the commands
 - Queues
 - Processes
 - Namelist
 - Topic Security

MQ Security Overview – Check list (continued)

- Other potential security items (not covered in this session):
 - Do any users need to protect the use of the MQOPEN or MQPUT1 options relating to the use of context?
 - Do you need to protect the use of alternative user IDs?
 - Do you need to tailor which user IDs are to be used for resource security checks through RESLEVEL?
 - Do you need to 'timeout' unused user IDs from IBM MQ ?
 - Do you want to use Transport Layer Security (TLS)?
 - Do you use clients?
 - Do you send passwords from client applications?

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MQ Security Implementation Considerations

- MQADMIN Class
 - Switches
 - RESLEVEL
- Profile definitions
 - HLQs (ssid)
 - Queue manager profile (qmgr.profile.name)
 - Queue sharing group profiles (qsg.profile.name)

MQ Security Implementation Considerations

- Queue manager profile (qmgr.profile.name)
- Queue sharing group profiles (qsg.profile.name)

MQ Security Switches – RACF Profiles

- If qmgr-name.NO.SUBSYS.SECURITY is present
 - No further security checks are performed – get out.
- If qsg-name.NO.SUBSYS.SECURITY is not found
 - Security is on and checking will start with queue managers
 - else
 - If qmgr-name.YES.SUBSYS.SECURITY is present, checking will start with queue managers
 - Else
 - No further security checks are performed – get out.
- At this point assuming at security is on and continue to next slide.

MQ Security Switches – SUBSYS is not NO

- If qmgr-name.NO.SUBSYS.SECURITY is present (e.g. CSQ1.NO.SUBSYSTEM.SECURITY)
 - No further security checks are performed – get out.
- If qsg-name.NO.SUBSYS.SECURITY is not found
 - Security is on and checking will start with queue managers
 - else
 - If qmgr-name.YES.SUBSYS.SECURITY is present, checking will start with queue managers
 - Else
 - No further security checks are performed – get out.

MQ Security Switches – SUBSYS is not NO

- Connections – ssid.NO.CONNECT.CHECKS
- Commands – ssid.NO.CMD.CHECKS
- Commands Resource – ssid.NO.CMD.RESC.CHECKS
- Queues – ssid.NO.QUEUE.CHECKS
- Queue context – ssid.NO.CONTEXT.CHECKS
- Alternate userid – ssid.NO.ALTERNATE.USER.CHECKS
- Topics – ssid.NO.TOPIC.CHECKS
- Processes – ssid.NO.PROCESS.CHECKS
- Namelists – ssid.NO.NLIST.CHECKS

MQ Security Switches – SUBSYS is not NO

Class	Profile key	T	UACC
MQADMIN	CSQ1.NO.SUBSYS.SECURITY		NONE
MQADMIN	CSQ2.NO.SUBSYS.SECURITY		READ
MQADMIN	CSQ3.NO.ALTERNATE.USER.CHECKS		NONE
MQADMIN	CSQ3.NO.CMD.CHECKS		NONE
MQADMIN	CSQ3.NO.CMD.RESC.CHECKS		NONE
MQADMIN	CSQ3.NO.CONNECT.CHECKS		NONE
MQADMIN	CSQ3.NO.CONTEXT.CHECKS		NONE
MQADMIN	CSQ3.NO.NLIST.CHECKS		NONE
MQADMIN	CSQ3.NO.PROCESS.CHECKS		NONE
MQADMIN	CSQ3.NO.QMGR.CHECKS		NONE
MQADMIN	CSQ3.NO.QUEUE.CHECKS		NONE
MQADMIN	CSQ3.NO.SUBSYS.SECURITY		READ
MQADMIN	CSQ3.NO.TOPIC.CHECKS		NONE
MQADMIN	CSQ4.NO.**	G	READ
MQADMIN	*.NO.SUBSYS.SECURITY	G	NONE

MQ Security Switches

Profile key	Class	TW	UACC
*.NO.SUBSYS.SECURITY	MQADMIN	G	NONE
CSQ1.DISPLAY.**	MQCMDS	G	NONE
CSQ1.NO.SUBSYS.SECURITY	MQADMIN		NONE
CSQ1.PAYROLL	MQQUEUE		NONE
CSQ1.PAYTEST	MQPROC		NONE

MQ Security Switches – SUBSYS is not NO

```
%CSQ1 DISPLAY SECURITY ALL
```

```
CSQH015I %CSQ1 Security timeout = 54 minutes
```

```
CSQH016I %CSQ1 Security interval = 12 minutes
```

```
CSQH037I %CSQ1 Security using uppercase classes
```

```
CSQH030I %CSQ1 Security switches ...
```

```
CSQH031I %CSQ1 SUBSYSTEM: OFF, 'CSQ1.NO.SUBSYS.SECURITY' found
```

```
CSQH040I %CSQ1 Connection authentication ...
```

```
CSQH041I %CSQ1 Client checks: OPTIONAL
```

```
CSQH042I %CSQ1 Local bindings checks: OPTIONAL
```

```
CSQ9022I %CSQ1 CSQHPDTC ' DISPLAY SECURITY' NORMAL COMPLETION
```

MQ QMGR Security Messages

```
%CSQ1 CSQHINSQ Security using uppercase classes
%CSQ1 CSQHINSQ SUBSYSTEM security switch set ON, profile 'CSQ1.NO.SUBSYS.SECURITY' not found
%CSQ1 CSQHINSQ QMGR security switch set ON, profile 'CSQ1.YES.QMGR.CHECKS' found
%CSQ1 CSQHINSQ QSG security switch set OFF, profile 'SQ05.NO.QSG.CHECKS' found
%CSQ1 CSQHIS1C CONNECTION security switch set OFF, profile 'CSQ1.NO.CONNECT.CHECKS' found
%CSQ1 CSQHIS1C COMMAND security switch set ON, profile 'CSQ1.NO.CMD.CHECKS' not found
%CSQ1 CSQHIS1C CONTEXT security switch set OFF, profile 'CSQ1.NO.CONTEXT.CHECKS' found
%CSQ1 CSQHIS1C ALTERNATE USER security switch set ON, profile '
CSQ1.NO.ALTERNATE.USER.CHECKS' not found
%CSQ1 CSQHIS1C COMMAND RESOURCES security switch set OFF, profile 'CSQ1.NO.CMD.RESC.CHECKS'
found
%CSQ1 CSQHIS1C PROCESS security switch set ON, profile 'CSQ1.NO.PROCESS.CHECKS' not found
%CSQ1 CSQHIS1C NAMELIST security switch set ON, profile 'CSQ1.NO.NLIST.CHECKS' not found
%CSQ1 CSQHIS1C QUEUE security switch set ON, profile 'CSQ1.NO.QUEUE.CHECKS' not found
%CSQ1 CSQHIS1C TOPIC security switch set ON, profile 'CSQ1.NO.TOPIC.CHECKS' not found
```

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- Activate and RACLIST the RACF MQADMIN class.
- Check your switch settings.
- Do you need security on any of the following:
 - Connections
 - Checking on command
 - Resource used in the commands
 - Queues
 - Processes
 - Namelist
 - Topic Security

MQ Security – Connections

- MQCONN
 - hlq.BATCH – batch jobs, TSO, USS,
 - hlq.CHIN – channel initiator address space userid
 - hlq.CICS – CICS address space userid
 - hlq.IMS - IMS region userid

MQ Security – Connections

```
%CSQ1 DISPLAY CONN(*)
```

```
CSQM293I %CSQ1 CSQMDRTC 39 CONN FOUND MATCHING REQUEST CRITERIA
```

```
CSQM201I %CSQ1 CSQMDRTC DISPLAY CONN DETAILS 551
```

```
CONN (D7DBB9B7F14C0001)
```

```
EXTCONN (C3E2D8C3C3E2D8F04040404040404040)
```

```
TYPE (CONN)
```

```
END CONN DETAILS
```

```
CSQM201I %CSQ1 CSQMDRTC DISPLAY CONN DETAILS 552
```

```
CONN (D7DBB9B80AF50001)
```

```
EXTCONN (C3E2D8C3C3E2D8F04040404040404040)
```

```
TYPE (CONN)
```

```
END CONN DETAILS
```

```
CSQM201I %CSQ1 CSQMDRTC DISPLAY CONN DETAILS 553
```

```
CONN (D7DBB9B80E150001)
```

```
EXTCONN (C3E2D8C3C3E2D8F04040404040404040)
```

```
TYPE (CONN)
```

MQ Security – Commands & Command Resource

- MQCMD
 - Display Security
 - Refresh Security
 - Reverify Security – userid1, userid2, . . .
 - Alter Security - INTERVAL(nn) | TIMEOUT(nn)
- Hundreds of commands to control.

MQ Security – Commands & Command Resource

Command	Command profile for MQCMDS	Access level for MQCMDS	Command resource profile for MQADMIN or MXADMIN	Access level for MQADMIN or MXADMIN
ALTER AUTHINFO	hlq.ALTER.AUTHINFO	ALTER	hlq.AUTHINFO.resourcename	ALTER
ALTER BUFFPOOL	hlq.ALTER.BUFFPOOL	ALTER	No check	-
ALTER CFSTRUCT	hlq.ALTER.CFSTRUCT	ALTER	No check	-
ALTER CHANNEL	hlq.ALTER.CHANNEL	ALTER	hlq.CHANNEL.channel	ALTER
ALTER NAMELIST	hlq.ALTER.NAMELIST	ALTER	hlq.NAMELIST.namelist	ALTER

MQ Security – Commands & Command Resource

Command	Command profile for MQCMDS	Access level for MQCMDS	Command resource profile for MQADMIN or MXADMIN	Access level for MQADMIN or MXADMIN
DEFINE AUTHINFO	hlq.DEFINE.AUTHINFO	ALTER	hlq.AUTHINFO.resourcename	ALTER
DEFINE BUFFPOOL	hlq.DEFINE.BUFFPOOL	ALTER	No check	-
DEFINE CFSTRUCT	hlq.DEFINE.CFSTRUCT	ALTER	No check	-
DEFINE CHANNEL	hlq.DEFINE.CHANNEL	ALTER	hlq.CHANNEL.channel	ALTER
DEFINE LOG	hlq.DEFINE.LOG	ALTER	No check	-
DEFINE MAXSMGS	hlq.DEFINE.MAXSMGS	ALTER	No check	-

MQ Security – Commands & Command Resource

Command	Command profile for MQCMDS	Access level for MQCMDS	Command resource profile for MQADMIN or MXADMIN	Access level for MQADMIN or MXADMIN
DISPLAY CHLAUTH	hlq.DISPLAY.CHLAUTH	READ	No check	-
DISPLAY CHSTATUS	hlq.DISPLAY.CHSTATUS	READ	No check	-
DISPLAY CLUSQMGR	hlq.DISPLAY.CLUSQMGR	READ	No check	-
DISPLAY CMDSERV	hlq.DISPLAY.CMDSERV	READ	No check	-

MQ Security – Commands & Command Resource

Command	Command profile for MQCMDS	Access level for MQCMDS	Command resource profile for MQADMIN or MXADMIN	Access level for MQADMIN or MXADMIN
RECOVER BSDS	hlq.RECOVER.BSDS	CONTROL	No check	-
RECOVER CFSTRUCT	hlq.RECOVER.CFSTRUCT	CONTROL	No check	-
REFRESH CLUSTER	hlq.REFRESH.CLUSTER	ALTER	No check	-
REFRESH QMGR	hlq.REFRESH.QMGR	ALTER	No check	-
REFRESH SECURITY	hlq.REFRESH.SECURITY	ALTER	No check	-

MQ Security – Commands - DISPLAY

DISPLAY SECURITY ALL|INTERVAL|SWITCHES|TIMEOUT

**Displays the current security settings active on your queue manager.
Includes a message which will show either:**

CSQH001I %CSQ1 CSQHINSQ Security using uppercase classes

or

CSQH001I %CSQ1 CSQHINSQ Security using mixed case classes

Shows which security switches are ON/OFF:

**CSQH024I %CSQ1 CSQHIS1C TOPIC security switch set ON,
profile 'CSQ1.NO.TOPIC.CHECKS' not found**

or

**CSQH021I %CSQ1 CSQHIS1C TOPIC security switch set OFF,
profile 'CSQ1.NO.TOPIC.CHECKS' found**

MQ Security – Commands - Refresh

- **REFRESH SECURITY**

- **(*|MQADMIN,MQQUEUE,MQPROC,MQNLIST,MXADMIN,MXQUEUE, MXPROC,MXNLIST,MXTOPIC)**

- **TYPE**

- **(CLASSES|AUTHSERV|SSL|CONNAUTH)**

- **Command Qualifier**

- *** - default**

- **Class – RACF class**

- **Authserv – default on non z/os**

- **SSL - refreshes cached view of the SSL key repository, locations of LDAP servers for Certificate Name Revocation and the key repository**

- **CONAUTH - Refreshes the cached view of the configuration for connection authentication**

MQ Security – Commands - DISPLAY

%CSQ1 REFRESH SECURITY(*)

CSQH001I %CSQ1 CSQHCHK4 Security using uppercase classes
CSQH021I %CSQ1 CSQHREFA SUBSYSTEM security switch set OFF, profile
'CSQ1.NO.SUBSYS.SECURITY' found
CSQ9022I %CSQ1 CSQHSREF ' REFRESH SECURITY' NORMAL COMPLETION

%CSQ1 REFRESH SECURITY(MQADMIN)

CSQH001I %CSQ1 CSQHCHK4 Security using uppercase classes
CSQH021I %CSQ1 CSQHREFA SUBSYSTEM security switch set OFF, profile
'CSQ1.NO.SUBSYS.SECURITY' found
CSQ9022I %CSQ1 CSQHSREF ' REFRESH SECURITY' NORMAL COMPLETION

%CSQ1 REFRESH SECURITY(MQCONN)

CSQ9015E %CSQ1 Parameter 'MQCONN' is unacceptable for 'SECURITY'
CSQ9023E %CSQ1 CSQ9SCND 'REFRESH SECURITY' ABNORMAL COMPLETION

%CSQ1 REFRESH SECURITY(MQPROC)

CSQH018I %CSQ1 CSQHSREF Security refresh for 'MQPROC' not processed,
SUBSYSTEM security switch set OFF
CSQ9022I %CSQ1 CSQHSREF ' REFRESH SECURITY' NORMAL COMPLETION

MQ Security – Queues

- MQQUEUE
 - hlq.queueename
- Application Queues
 - Local Queues
 - Remote Queues
 - Alias Queues
 - Model Queues
- System Queues
 - Transmission Queues
 - Dead-Letter Queue
 - Initiation Queues
 - Managed Queues

MQ Security – Queues

%CSQ1 DISPLAY QUEUE(*)

CSQM293I %CSQ1 CSQMDRTC 59 QUEUE FOUND MATCHING REQUEST CRITERIA

CSQM201I %CSQ1 CSQMDRTC DISPLAY QUEUE DETAILS 873

QUEUE (CICS01.INITQ)

TYPE (QLOCAL)

QSGDISP (QMGR)

END QUEUE DETAILS

CSQM201I %CSQ1 CSQMDRTC DISPLAY QUEUE DETAILS 874

QUEUE (CSQ1.DEAD.QUEUE)

TYPE (QLOCAL)

QSGDISP (QMGR)

END QUEUE DETAILS

CSQM201I %CSQ1 CSQMDRTC DISPLAY QUEUE DETAILS 875

QUEUE (CSQ1.DEFXMIT.QUEUE)

TYPE (QLOCAL)

QSGDISP (QMGR)

END QUEUE DETAILS

MQ Security – Queues

```
CSQM201I %CSQ1 CSQMDRTC  DISPLAY QUEUE DETAILS 878  
QUEUE (SYSTEM.ADMIN.ACTIVITY.QUEUE)  
TYPE (QLOCAL)  
QSGDISP (QMGR)  
  END QUEUE DETAILS
```

```
CSQM201I %CSQ1 CSQMDRTC  DISPLAY QUEUE DETAILS 879  
QUEUE (SYSTEM.ADMIN.CHANNEL.EVENT)  
TYPE (QLOCAL)  
QSGDISP (QMGR)  
  END QUEUE DETAILS
```

```
CSQM201I %CSQ1 CSQMDRTC  DISPLAY QUEUE DETAILS 880  
QUEUE (SYSTEM.ADMIN.COMMAND.EVENT)  
TYPE (QLOCAL)
```

MQ Security – Processes

- **MQPROC**
 - *hlq.processname*

MQ Security – Processes

```
%%CSQ1 DISPLAY PROCESS(*)
```

```
CSQM293I %CSQ1 CSQMDRTC 2 PROCESS FOUND MATCHING REQUEST CRITERIA
```

```
CSQM201I %CSQ1 CSQMDRTC DISPLAY PROCESS DETAILS 223
```

```
PROCESS (CSQ4IVP1)
```

```
QSGDISP (QMGR)
```

```
END PROCESS DETAILS
```

```
CSQM201I %CSQ1 CSQMDRTC DISPLAY PROCESS DETAILS 224
```

```
PROCESS (SYSTEM.DEFAULT.PROCESS)
```

```
QSGDISP (QMGR)
```

```
END PROCESS DETAILS
```

```
CSQ9022I %CSQ1 CSQMDRTC ' DISPLAY PROCESS ' NORMAL COMPLETION
```

MQ Security – Name Lists

- **MQNLIST**

- *hlq.namelist*

MQ Security – Name Lists

```
%CSQ1 DISPLAY NAMELIST(*)
CSQM293I %CSQ1 CSQMDRTC 3 NAMELIST FOUND MATCHING REQUEST CRITERIA
CSQM201I %CSQ1 CSQMDRTC  DISPLAY NAMELIST DETAILS 247
NAMELIST (SYSTEM.DEFAULT.NAMELIST)
NLTYPE (NONE)
QSGDISP (QMGR)
  END NAMELIST DETAILS
CSQM201I %CSQ1 CSQMDRTC  DISPLAY NAMELIST DETAILS 248
NAMELIST (SYSTEM.QPUBSUB.QUEUE.NAMELIST)
NLTYPE (QUEUE)
QSGDISP (QMGR)
  END NAMELIST DETAILS
CSQM201I %CSQ1 CSQMDRTC  DISPLAY NAMELIST DETAILS 249
NAMELIST (SYSTEM.QPUBSUB.SUBPOINT.NAMELIST)
NLTYPE (NONE)
QSGDISP (QMGR)
  END NAMELIST DETAILS
CSQ9022I %CSQ1 CSQMDRTC ' DISPLAY NAMELIST' NORMAL COMPLETION
```

MQ Security – Topic Security

- **MXNLIST**
 - *hlq.topic*

MQ Security – Topic

```
%CSQ1 DISPLAY TOPIC(*)
```

```
CSQM293I %CSQ1 CSQMDRTC 5 TOPIC FOUND MATCHING REQUEST CRITERIA
```

```
CSQM201I %CSQ1 CSQMDRTC DISPLAY TOPIC DETAILS 277
```

```
TOPIC (SYSTEM.BASE.TOPIC)
```

```
TYPE (LOCAL)
```

```
QSGDISP (QMGR)
```

```
END TOPIC DETAILS
```

```
CSQM201I %CSQ1 CSQMDRTC DISPLAY TOPIC DETAILS 278
```

```
TOPIC (SYSTEM.BROKER.ADMIN.STREAM)
```

```
TYPE (LOCAL)
```

```
QSGDISP (QMGR)
```

```
END TOPIC DETAILS
```

```
CSQM201I %CSQ1 CSQMDRTC DISPLAY TOPIC DETAILS 279
```

```
TOPIC (SYSTEM.BROKER.DEFAULT.STREAM)
```

```
TYPE (LOCAL)
```

```
QSGDISP (QMGR)
```

```
END TOPIC DETAILS
```

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MQ Security Overview – Check list

- Activate and RACLIST the RACF MQADMIN class.
 - ‘Backstop’ entries
 - Auditing
 - Display settings to ensure you know what is being checked.
- Check your switch settings.
- Do you need security on any of the following:
 - Connections
 - Checking on command
 - Resource used in the commands
 - Queues
 - Processes
 - Namelist

MQ Security Switches – RACF Profiles

- If qmgr-name.NO.SUBSYS.SECURITY is present
 - No further security checks are performed – get out.
- If qsg-name.NO.SUBSYS.SECURITY is not found
 - Security is on and checking will start with queue managers
 - else
 - If qmgr-name.YES.SUBSYS.SECURITY is present, checking will start with queue managers
 - Else
 - No further security checks are performed – get out.

▪

MQ Security Switches – SUBSYS is not NO

- Connections – ssid.NO.CONNECT.CHECKS
- Commands – ssid.NO.CMD.CHECKS
- Commands Resource – ssid.NO.CMD.RESC.CHECKS
- Queues – ssid.NO.QUEUE.CHECKS
- Queue context – ssid.NO.CONTEXT.CHECKS
- Alternate userid – ssid.NO.ALTERNATE.USER.CHECKS
- Topics – ssid.NO.TOPIC.CHECKS
- Processes – ssid.NO.PROCESS.CHECKS
- Namelists – ssid.NO.NLIST.CHECKS



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