Interactive Session Recorder

Monitoring Guide
Release 5.2

February 2017

ORACLE

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Preface

About This Guide

The Interactive Session Recorder (ISR) Monitor Administration guide provides information about theISR's custom monitoring solution, created specifically to:

- Monitor the uptime of critical recording components
- Review the default tests configured upon installation
- Configure custom tests to monitor other components
- Configure SNMP and email alerts in the event a single test fails

This guide also provides the specific tests configured upon installation and the complete SNMP MIB for use with third-party SNMP monitoring systems.

Related Documentation

The following table describes the documentation set for this release.

Document Name	Document Description
ISR Release Notes	Contains information about new ISR features, fixes, and known issues.
ISR Installation Guide	Provides an overview of the ISR, hardware/software requirements and recommendations, storage considerations, pre-installation information, installation procedures, post-install verification procedures, making the first call, and additional advanced topics about the ISR.
ISR User Guide	Contains information about using the ISR Dashboard for all levels of users. Provides information about viewing, playing, deleting recordings, running reports, and managing user profiles.
ISR Administrator Guide	Contains information about using the ISR Dashboard for the Administrator level user (Super User, Account Administrator, Tenant Administrator). Provides information about creating and managing accounts, routes, and users. Also provides information about configuring the ISR, running reports, viewing active calls, and securing the ISR deployment.
ISR API Reference Guide	Contains information about ISR FACE, VoiceXML Commands, legacy application programming interfaces (APIs), Recording File Types/Formats Supported, Return Codes, sendIPCRCommand.jsp Subdialog, Advanced Options, and Troubleshooting.

Document Name	Document Description
ISR Monitoring Guide	Contains information about installing and configuring the ISR Monitor, the Monitor database schema, and the Monitor MIB.
ISR Remote Archival Web Services Reference Guide	Contains information about the Remote Archival Web Service, its methods, WSDL definitions, DataType definitions, sample responses, and importing its certificates into the client keystore.
ISR Security Guide	Contains information about security considerations and best practices from a network and application security perspective for the ISR product.

Revision History

Date	Description
September 2016	• Initial release of ISR 5.2 software.
February 2017	• Due to the fact that the ISR Monitor is not supported in the 5.2 release, all chapters except "Configuring ISR SNMP Agents" have been removed. • All references to the CIS have been removed. • Removes SNMP v1 from "Suported SNMP Versions".

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Configuring ISR SNMP Agents

Beyond the ISR Monitoring application, each host is configured as a managed SNMP device. The ISR host's default SNMP implementation assumes the product is deployed in a managed network where the managers have the task of monitoring ISR hosts by SNMP queries and traps for software and hardware operational status. Each managed ISR host includes a software component called an agent which responds to a query or sends an alarm with information via SNMP to the manager.

Supported SNMP Versions

The ISR supports several versions of SNMP.

- SNMP v2c
- SNMP v3

Default SNMP Configuration

The ISR hosts may be configured for SNMP and SNMPv3 by "yum installing" the standard net-snmp, net-snmp-libs, and net-snmp-utils packages on each host. With SNMP enabled, the hosts expect secure requests that include a username, password, and user security level ("authNoPriv" by default), following version 3 of the SNMP protocol. For more information on obtaining, provisioning, configuring, and securing SNMPv3, see *https://access.redhat.com/documentation/en-US/Red_Hat_Enterprise_Linux/7/html/System_Administrators_Guide/sect-System_Monitoring_Tools-Net-SNMP.html*.

SNMP configuration is located in the following file:

/etc/snmp/snmpd.conf

While there are multiple ways to configure SNMP, Oracle recommends the following ISR SNMP configuration:

```
###############################################################################
#
# snmpd.conf:
###############################################################################
#
##### SNMP v3 User #####
createUser isrsnmp MD5 <your_snmp_user_password>
rouser isrsnmp auth .1.3.6.1.4.1.2021
disk / 500000 (or)
load 20
```

In the above example, the SNMP agent configuration for each host consists of a user and password specific to the SNMPv3 protocol. Within the example, the uesrname is "isrsnmp" and the default password is chosen by the administrator. These two parameters must be included in any Get requests to the agent.

The disk configuration is as follows:

```
disk PATH [MIN=100000]
PATH: mouth path to the disk in question.
MIN: Disks with space below this value will have the Mib’s errorFlag set. Can
be a raw integer value (units of kB) or a percentage followed by the %
symbol. Default value = 100000.
```

The load configuration are as follows:

```
Check for unreasonable load average values. Watch the load average levels on
the machine.
load [1MAX=12.0] [5MAX=12.0] [15MAX=12.0]
1MAX: If the 1 minute load average is above this limit at query time, the
errorFlag will be set.
5MAX: Similar, but for 5 min average.
15MAX: Similar, but for 15 min average.
The results are reported in the laTable section of the UCD-SNMP-MIB tree
```

Enabling SNMP Traps on ISR Hosts

To enable the sending of SNMP traps on an ISR host you must manually edit the /etc/snmp/snmpd.conf file.

The following example shows the recommended additional configuration to turn on the SNMPv2c trap:

```
# trap2sink: A SNMPv2c trap receiver
#   arguments: host [community] [portnum]
trap2sink  <NMS/trapsink IP address> <community_string> <SNMP port, likely
162>
# Set up the credentials to retrieve monitored values
createUser    _internal MD5 "the first sign of madness"
iquerySecName _internal
rouser        _internal
# Active the standard monitoring entries
defaultMonitors         yes
linkUpDownNotifications yes
```

By activating the **defaultMonitors** parameter, you configure the Event MIB tables to monitor the various UCD-SNMP-MIB tables. This is the equivalent to the snmpd.conf configuration:

```
monitor -o prNames -o prErrMessage "process table" prErrorFlag != 0
monitor -o memErrorName -o memSwapErrorMsg "memory" memSwapError != 0
monitor -o extNames -o extOutput "extTable" extResult != 0
monitor -o dskPath -o dskErrorMsg "dskTable" dskErrorFlag != 0
monitor -o laNames -o laErrMessage  "laTable" laErrorFlag != 0
monitor -o fileName -o fileErrorMsg  "fileTable" fileErrorFlag != 0
```

Activating "linkUpDownNotifications" defines two traps, "linkUpTrap" and LinkDownTrap as notifications for a network interface being taken up or down.

Extending the SNMP Configuration

The snmpconf utility provides some basic SNMP agent configurations. The basic SNMP agent setup command, **snmpconf -r none -g basic_setup**, is a step-by-step guide to set up community and system information.

To extend basic or default SNMP functionality, the snmpd.conf file may also be edited manually following the syntax and functions supported by the net-snmp agent. Use the **man snmpd.conf** command on the ISR host for more detail or consult the following URL:

http://www.net-snmp.org/docs/man/snmpd.conf.html

Note: You must restart the "snmpd" service to load a new configuration. To restart the service, execute the **service snmpd restart** command on the ISR host.

ISR Extended SNMP Configuration Example (Network Interfaces)

To extend the monitored variables beyond the default ISR distribution, you must edit the /etc/snmp/snmpd.conf file to replace the following line:

```
rouser isrsnmp auth .1.3.6.1.4.1.2021
```

with the following string:

```
rouser isrsnmp auth .1.3.6.1
```

This allows you to monitor variables from two more recommended MIBs, NET-SNMP-MIB and NET-SNMP-AGENT-MIB.

Some basic SNMP agent configurations are easily performed with the included configuration utility, "snmpconf". The basic SNMP agent setup command, **snmpconf -r none -g basic_setup**, is a step-by-step guide to set up community and system information.

To extend basic or default SNMP functionality, the "snmpd.conf" file may also be edited manually following the syntax and functions supported by the net-snmp agent. Use "man snmpd.conf" on the ISR host for more detail or consult the following URL:

http://www.net-snmp.org/docs/man/snmpd.conf.html

Note: The "snmpd" service must be restarted to load a new configuration. To restart the service, execute the **service snmpd restart** command on the ISR host.

Configuring ISR SNMPv2c

The following is a basic example of an SNMP version 2c configuration, replacing the default SNMPv3 configuration.

Note: The configuration is located in the /etc/snmp/snmpd.conf file.

```
###############################################################################
#
# snmpd.conf:
###############################################################################
#
#### SNMP Configuration v2c ####
#### Community string set to 'isrsnmp'####
com2sec isrSnmpUser default isrsnmp
#### security group ####
group isrSnmpGroup v2c isrSnmpUser
#### ISR .extended. view ####
view all included .1.3.6.1.4.1.2021
access isrSnmpGroup "" any noauth exact all none none
```

Verify the configuration by restarting the SNMP agent service and check that the expected OIDs are displayed when you execute the following command:

```
# service restart snmpd
# snmpwalk -v2c -c isrsnmp localhost .1.3.6.1.4.1.2021
```

ISR SNMP Get List

The table below includes SNMP Gets for host resources of CPU, disk, and memory. The first two columns, Name and OID, may be used as the final field in the following SNMPv3 example query:

```
# snmpget -v 3 -u <user> -| authNoPriv -A <password> <agent IP> <OID/Name>
```

These SNMP requests are defined within the UCD-SNMP-MIB MIB document as .1.3.6.1.4.1.2021 and may be executed from any compatible NMS.

Note: For hardware-specific SNMP variables available for Gets, please refer to the documentation for the VM Hypervisor supporting the ISR.

Name	OID	Description
laLoad.1	.1.3.6.1.4.1.2021.10.1.3.1	CPU Load: 1 minute average
laLoad.2	.1.3.6.1.4.1.2021.10.1.3.2	CPU Load: 5 minute average
laLoad.3	.1.3.6.1.4.1.2021.10.1.3.3	CPU Load: 15 minute average
laErrorFlag.1	.1.3.6.1.4.1.2021.10.1.100.1	CPU Load: set to 1 if CPU load average exceeds threshold, otherwise 0 (1min)
laErrorFlag.2	.1.3.6.1.4.1.2021.10.1.100.2	CPU Load: set to 1 if CPU load average exceeds threshold, otherwise 0 (5 mins)
laErrorFlag.3	.1.3.6.1.4.1.2021.10.1.100.3	CPU Load: set to 1 if CPU load average exceeds threshold, otherwise 0 (15 mins)
laErrMessage.1	.1.3.6.1.4.1.2021.10.1.101.1	CPU Load: message describing error (1 min)
laErrMessage.2	.1.3.6.1.4.1.2021.10.1.101.2	CPU Load: message describing error (5 mins)
laErrMessage.3	.1.3.6.1.4.1.2021.10.1.101.3	CPU Load: message describing error (15 mins)
laConfig.1	.1.3.6.1.4.1.2021.10.1.4.1	CPU Load: threshold setting (1 min=20)
laConfig.2	.1.3.6.1.4.1.2021.10.1.4.2	CPU Load: threshold setting (5 mins=20)
laConfig.3	.1.3.6.1.4.1.2021.10.1.101.3	CPU Load threshold setting (15 mins=20)
ssCpuRawUser.0	.1.3.6.1.4.1.2021.11.50.1	CPU: The number of ticks (1/100s) spent processing user-level code
ssCpuRawSystem.0	.1.3.6.1.4.1.2021.11.52.0	CPU: The number of ticks (1/100s) spent waiting for IO
ssCpuRawWait.0	.1.3.6.1.4.1.2021.11.54.0	CPU: The number of ticks (1/100s) spent waiting for IO Note: This counter is cumulative over all CPUs, so the value is typically multiplied by 4*100 (the standard four processors on an ISR host multiplied by 100 ticks/ second).
dskTotal.1	.1.3.6.1.4.1.2021.9.1.6.1	Disk: Total disk size of the / partition in kB
dskAvail.1	.1.3.6.1.4.1.2021.9.1.7.1	Disk: Available space on the partition in kB
dskUsed.1	.1.3.6.1.4.1.2021.9.1.8.1	Disk: Used space on the partition in kB
dskPercent.1	.1.3.6.1.4.1.2021.9.1.9.1	Disk: Percentage of used space on the partition
dskErrorFlag.1	.1.3.6.1.4.1.2021.9.1.100.1	Disk: Error flag set to 1 if disk is under configured minimum space; otherwise 0
dskErrorMsg.1	.1.3.6.1.4.1.2021.9.1.101.1	Disk: Descriptive error message
dskMinimum.1	.1.3.6.1.4.1.2021.9.1.4.1	Disk: Threshold setting for minimum (set to 500000 kB)

Name	OID	Description
memTotalReal.0	.1.3.6.1.4.1.2021.4.5.0	Memory: Total RAM in machine
memAvailReal.0	.1.3.6.1.4.1.2021.4.6.0	Memory: Total RAM unused
memTotalFree.0	.1.3.6.1.4.1.2021.4.11.0	Memory: Total memory free (covers RAM and swap)
memTotalSwap.0	.1.3.6.1.4.1.2021.4.3.0	Swap: Total swap space configured for host
memAvailSwap.0	.1.3.6.1.4.1.2021.4.4.0	Swap: Available swap
memMinimumSwap.0	.1.3.6.1.4.1.2021.4.12.0	Swap: memSwapError set to 1 if memAvailSwap falls below this threshold
memSwapError	.1.3.6.1.4.1.2021.4.100	Swap: Error flag set to 1 if memAvailSwap value falls below memMinimumSwap
memSwapErrorMsg	.1.3.6.1.4.1.2021.4.101	Swap: Error message if memAvailSwap value falls below memMinimumSwap
ifIndex	.1.3.6.1.2.1.2.2.1.1	Index ID of every network interface available on the VM.
ifDescr	.1.3.6.1.2.1.2.2.1.2	Description of every network interface available on the VM (for example, eth0)
ifOperStatus	.1.3.6.1.2.1.2.2.1.8	The current state of each interface (up or down)
ifOutOctets	.1.3.6.1.2.1.2.2.1.16	The total number of octets transmitted out of the interface, including framing packets
ifInOctets	.1.3.6.1.2.1.2.2.1.10	The total number of octets received on each interface, including framing characters
ifSpeed	.1.3.6.1.2.1.2.2.1.5	The interface's current bandwidth in bits per second
ifInErrors	.1.3.6.1.2.1.2.2.1.14	The number of inbound packets that contained errors, per interface
ifOutErrors	.1.3.6.1.2.1.2.2.1.20	The number of outbound packets that could not be transmitted because of errors, per interface

SNMP Trap List

The table below includes SNMP Traps for host resources of CPU, disk, memory, and swap space.

Name	Condition	Trap Message Example
memSwapErrorMsg	memSwapError ! =0	CPU Load: 5 minute average
memSwapErrorMsg	memSwapError !0 = >0	(swap error cleared) Memory occupancy alarm cleared
dskErrorMsg	dskErrorFlat ! = 0	(default behavior space < 500MB) /: less than 500000 free (=414622)

Name	Condition	Trap Message Example
dskErrorMsg	dskErrorFlat !0 = >0	(disk error cleared) Disk occupancy alarm cleared
IaErrMessage	IaErrorFlat ! = 0	(default behavior load > 20%) 1 min Load Average too high (=1.26)
IaErrMessage	IaErrorFlat !0 = >0	(load error cleared) CPU Load alarm cleared

SNMP Agent MIBs

The UCD-SNMP-MIB defines the tables to store status and monitor values of the recommended ISR SNMP variables. The traps configured and enabled on an ISR host SNMP agent using the recommended configuration are defined with in NET-SNMP-MIB and NET-SNMP-AGENT-MIB. These related MIBs are accessible at the following URLs:

UCD-SNMP-MIB:

http://www.net-snmp.org/docs/mibs/ucdavis.html

and

http://www.net-snmp.org/docs/mibs/UCD-SNMP-MIB.txt

NET-SNMP-MIB:

http://www.net-snmp.org/docs/mibs/NET-SNMP-MIB.txt

and

http://www.net-snmp.org/docs/mibs/netSnmp.html

NET-SNMP-AGENT-MIB:

http://www.net-snmp.org/docs/mibs/netSnmpAgentMIB.html

and

http://www.net-snmp.org/docs/mibs/NET-SNMP-AGENT-MIB.txt

Also, all MIBs included as part of net-snmp are found at the following URL:

http://www.net-snmp.org/docs/mibs/