

在ISR、ASR和Catalyst网络设备上部署诊断签名

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简介

本文档介绍如何部署诊断签名(DS)以自动收集诊断数据，这些数据是对思科集成多业务路由器(ISR)、思科聚合多业务路由器(ASR)、Cisco Catalyst 6500系列交换机和7600系列路由器的问题进行故障排除所需的。

先决条件

要求

本文档没有任何特定的要求。

使用的组件

本文中使用的show命令是从运行Cisco IOS® 15.4(2)T3版的Cisco ISR 3945系列路由器捕获的。

DS支持在下表所列的Cisco IOS版本中提供：

Platform	软件版本
ISR 1900、2900、3900系列路由器	思科IOS 15.4(2)T及更高版本
ISR 4300、4400系列路由器	思科IOS 15.5(2)S、IOS XE 3.15及更高版本
ASR 1000系列路由器	思科IOS 15.5(2)S、IOS XE 3.15及更高版本
思科云服务路由器1000V系列	思科IOS 15.5(2)S、IOS XE 3.15及更高版本
7600 系列路由器	思科IOS 15.3(3)S及更高版本
Catalyst 6500 系列交换机	思科IOS 15.1(2)SY3及更高版本

本文档中的信息都是基于特定实验室环境中的设备编写的。本文档中使用的所有设备最初均采用原始（默认）配置。如果您使用的是真实网络，请确保您已经了解所有命令的潜在影响。

背景信息

DS是XML文件，包含有关问题触发事件和为补救或排除故障而应采取的操作的信息。它们由思科技术支持中心(TAC)创建，可通过[Smart Call Home](#)进行部署，或者您可以手动将文件加载到设备上。您可以使用[诊断签名查找工具\(DSLT\)](#)，以便针对给定类型的问题找到正确的DS。

在本文档中，您将学习如何查找和部署DS以排除PVDM-3 DSP崩溃故障。此DS执行以下操作：

1. 配置路由器以生成数字信号处理器(DSP)崩溃转储。
2. 通过将DSP转储写入文件<file name>系统日志消息检测DSP崩溃。
3. 收集相关的**show**命令。
4. 通过电子邮件将收集的数据发送到attach@cisco.com。

在安装时，系统会提示您输入要创建的DSP崩溃转储文件的最大数量、要在邮件主题中使用的案例编号以及要通知DSP崩溃发生的电子邮件地址。

部署

本节介绍如何部署DS。

配置

注意：DS是Cisco IOS中呼叫总部功能的一部分。

要部署DS，您必须完成的第一步是配置Call-Home功能。启用Call-home功能后，DS支持将自动启用并配置为默认使用CiscoTAC-1配置文件。

以下是Cisco IOS中Smart Call Home的示例配置：

```
service call-home
call-home
contact-email-addr router@cisco.com
mail-server 192.0.2.33 priority 1
http-proxy "192.0.2.60" port 3128
no syslog-throttling profile "CiscoTAC-1"
active destination transport-method http
no destination transport-method email
```

```
Router#show call-home diagnostic-signature
Current diagnostic-signature settings:
Diagnostic-signature: enabled
Profile: CiscoTAC-1 (status: ACTIVE)
Environment variable:
Not yet set up
```

```
Downloaded DSes:
Last Update
DS ID DS Name Revision Status (GMT+00:00)
-----
```

Router#

下载

第二步是查找签名ID或下载DS XML文件。为此，请在诊断签名查找工具中提供平台、产品、问题范围、问题类型和软件版本，如下所示：

Diagnostic Signature Lookup Tool **BETA** [Contributors](#)

This tool makes it easier to find the "most relevant" Diagnostic Signatures (DS) to automate debug enablement and data collection for a given type of UC related problem. The data collected by DS will enable the TAC Engineer to resolve your problem faster and efficiently. [details](#) v

Platform	Cisco 1900, 2900, 3900 ISR Series	▼
Product	Cisco IOS Gateway	▼
Problem Scope	Digital Signal Processor (DSP)	▼
Problem Type	DSP Crash	▼
Software Version	IOS 15.4(2)T, 15.4(3)S, 15.5(2)S and higher	

[Submit](#)

DS ID: 10492

Description: This DS configures DSP crash dump generation, identifies crash event and collects relevant show commands required to troubleshoot and identify root cause. Show commands outputs are sent to Cisco TAC via email and DSP crashdump file is copied to the FTP server provided at the time of DS installation.

[View](#) [Download](#)

使用以下信息通过Smart Call Home下载DS，其DS ID:

```
call-home diagnostic-signature download 10492
```

使用以下信息将DS文件手动加载到设备：

```
Router#copy ftp://192.0.2.10/DS_10492.xml flash:
Destination filename [DS_10492.xml]?
Accessing ftp://192.0.2.10/DS_10492.xml...!
[OK - 3804/4096 bytes]
```

```
3804 bytes copied in 0.476 secs (7992 bytes/sec)
```

Router#

```
Router#call-home diagnostic-signature load flash:DS_10492.xml
Load file flash:DS_10492.xml success
```

Router#

以下是DS文件中各个块的概要视图：

```
Router#show call-home diagnostic-signature 10492
ID           : 10492
Name        : DS_PVDM3_DSP_Crash_Event_1
```

Functionality:

This DS configures DSP crash dump generation, identifies crash event and collects show commands required to troubleshoot and identify root cause.

This DS will have no impact on the performance of the router.

Prompts:

Variable: ds_number_of_files Prompt: Number of crashdump files
to be stored in the flash (1-5)
Type: integer Range: 1..5
Variable: ds_case_number Prompt: Enter TAC Case Number
(Case number to which diagnostics data need to be uploaded)
Type: regexp Pattern: 6[0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9]
Variable: ds_user_email Prompt: Enter Notification Email-Address
(Email address to which problem occurrence needs to be notified)
Type: regexp Pattern: [a-zA-Z0-9._%+-]+@[a-zA-Z0-9.-]+\.[a-zA-Z]+

Prerequisite:

Type : CMD
Element List :
CMD : config t
CMD : voice dsp crash-dump destination flash:dsp_crashdump
CMD : voice dsp crash-dump file-limit \$ds_number_of_files

Event:

Action Tag : a1
Event Tag : e1
Type : syslog
Syslog Pattern : .*writing out DSP dump to file ([^[:space:]]+).*

Includes action steps that may impact device state: No

Action:

Action Tag : a1
Type : EMAILTO
Email To : attach@cisco.com,\$ds_user_email
Subject : DSP Crashdump
Attach SR : \$ds_case_number
Element List :
DATA: show version
DATA: show voice dsp group all
DATA: show call active voice brief
DATA: show call active video brief
DATA: show call active fax brief
DATA: show sccp connection
DATA: show dspfarm all
DATA: dir \$ds_dsp_crashdump_file
DATA: show run

Postrequisite:

Type : CMD
Element List :
CMD : config t
CMD : no voice dsp crash-dump destination flash:dsp_crashdump
CMD : no voice dsp crash-dump file-limit \$ds_number_of_files
CMD : end

Router#

安装

注意：只有下载后处于挂起状态的签名才需要此步骤。

配置并下载DS后，必须安装：

```
Router#show call-home diagnostic-signature
```

```
Current diagnostic-signature settings:  
Diagnostic-signature: enabled  
Profile: CiscoTAC-1 (status: ACTIVE)  
Environment variable:  
    Not yet set up
```

```
Downloaded DSes:
```

DS ID	DS Name	Revision	Status	Last Update (GMT-04:00)
10492	DS_PVDM3_DSP_Crash_Event_1	1.0	pending	2015-06-04 20:01:24

```
Router#
```

在安装过程中，系统会提示您提出“提示”部分中定义的问题：

```
Router#call-home diagnostic-signature install 10492
```

```
Number of crashdump files to be stored in the flash (1-5) 5  
Enter TAC Case Number (Case number to which diagnostics data need to be uploaded)  
600000001  
Enter Notification Email-Address (Email address to which problem occurrence needs  
to be notified) attach@cisco.com  
All prompt variables are configured successfully.
```

```
Router#
```

```
Router#show call-home diagnostic-signature
```

```
Current diagnostic-signature settings:  
Diagnostic-signature: enabled  
Profile: CiscoTAC-1 (status: ACTIVE)  
Environment variable:  
    Not yet set up
```

```
Downloaded DSes:
```

DS ID	DS Name	Revision	Status	Last Update (GMT-04:00)
10492	DS_PVDM3_DSP_Crash_Event_1	1.0	registered	2015-06-04 20:01:24

```
Router#
```

注册DS后，将执行“先决条件”部分中指定的操作。在本示例中，配置了与DSP crashdump生成相关的命令：

```
Router#show run | section voice dsp  
voice dsp crash-dump file-limit 3  
voice dsp crash-dump destination flash:dsp_crashdump  
Router#
```

验证

本节介绍如何验证DS是否已安装并正常运行。

触发事件

思科建议您模拟问题触发器，以确保DS正常工作。例如，您可以通过test voice driver命令模拟DSP崩溃，如下所示：

```
Router#test voice driver
Enter Voice NM slot number : 0
```

```
C29xx/C39xx Debugging Section;
```

- 1 - FPGA Registers Read/Write
- 2 - 5510 DSP test
- 3 - DSPRM test
- 5 - IOCTRL TDM Registers Read/Write
- 6 - IOCTRL HDLC Registers Read/Write
- 7 - IOCTRL TDM Memory Read/Write
- 8 - get conn store address
- 9 - TDM PLL Read/Wrire
- 10 - SP2600 DSP test**
- 11 - Quit

```
Select option : 10
```

```
SP2600 DSP Testing Section:
```

- 1 - Display Device Information
- 2 - Reset 1 DSP
- 3 - Reset All DSPs
- 4 - Download DSP Firmware
- 5 - JTAG Read DSP Memory
- 6 - JTAG Write DSP Memory
- 7 - Keepalive Enable/Disable
- 8 - Display DSP Keepalive Status
- 9 - Simulate DSP Crash**
- 10 - ACK Testing
- 11 - Set Mbrd_dsp_debug Value
- 12 - PLD watch dog timers Enable/Disable
- 13 - Send Status_Request DSP Message
- 14 - Display Host and DSP MAC Address
- 15 - Display PLD and BOOTLOADER Version
- 16 - GigE enable/disable port
- 17 - Reset TDM port
- 18 - Show ports receiving oversubscription tone
- 19 - Display firmware build string
- 20 - Simulate All ARM Crash
- 21 - Simulate All ARM Crash after All DSS Crash
- 22 - Read PVDM PLD register
- 23 - Write PVDM PLD register
- 24 - Import DSP command file
- 25 - Switch DSP application between HR image and Streamware
- 26 - Show video capabilities of a DSP
- 27 - QUIT

```
Select option : 9
```

```
(1=DSP, 2=ARM) :1
```

```
Enter DSP id : 1
```

```
Enter Mode:
```

```
Mode 1: Simulates Assert Condition
```

```
Mode 2: Simulates Endless loop
```

```
Mode 3: Stop High Level Responses to Commands
```

```
Enter Mode: 1
```

```
SP2600 DSP Testing Section:
```

- 1 - Display Device Information
- 2 - Reset 1 DSP
- 3 - Reset All DSPs
- 4 - Download DSP Firmware
- 5 - JTAG Read DSP Memory
- 6 - JTAG Write DSP Memory
- 7 - Keepalive Enable/Disable
- 8 - Display DSP Keepalive Status
- 9 - Simulate DSP Crash
- 10 - ACK Testing
- 11 - Set Mbrd_dsp_debug Value
- 12 - PLD watch dog timers Enable/Disable
- 13 - Send Status_Request DSP Message
- 14 - Display Host and DSP MAC Address
- 15 - Display PLD and BOOTLOADER Version
- 16 - GigE enable/disable port
- 17 - Reset TDM port
- 18 - Show ports receiving oversubscription tone
- 19 - Display firmware build string
- 20 - Simulate All ARM Crash
- 21 - Simulate All ARM Crash after All DSS Crash
- 22 - Read PVDM PLD register
- 23 - Write PVDM PLD register
- 24 - Import DSP command file
- 25 - Switch DSP application between HR image and Streamware
- 26 - Show video capabilities of a DSP
- 27 - QUIT**

Select option : 27

C29xx/C39xx Debugging Section;

- 1 - FPGA Registers Read/Write
- 2 - 5510 DSP test
- 3 - DSPRM test
- 5 - IOCTRL TDM Registers Read/Write
- 6 - IOCTRL HDLC Registers Read/Write
- 7 - IOCTRL TDM Memory Read/Write
- 8 - get conn store address
- 9 - TDM PLL Read/Wrire
- 10 - SP2600 DSP test
- 11 - Quit**

Select option : 11

Router#

以下是show log命令的输出：

```
032517: Jun  5 00:02:46.300: writing out DSP dump to file  
flash:dsp_crashdump-1433462566-1  
032517: Jun  5 00:02:46.300: writing out DSP dump to file  
flash:dsp_crashdump-1433462566-1, sequence  
032517: Jun  5 00:02:46.300: writing out DSP dump to file  
flash:dsp_crashdump-1433462566-1, timestamp  
032532: Jun  5 00:02:46.344: DS-ACT-TRACE: call_home_ds_regexp_paren_str_get[2571],  
run regular expression once with pattern .*writing out DSP dump to file  
([^\[:space:]]+).  
032534: Jun  5 00:02:46.344: DS-ACT-TRACE: : writing out DSP dump to file flash:  
dsp_crashdump-1433462566-1  
032551: Jun  5 00:02:46.348: CALL-HOME-TRACE: Event 41 description <032517:
```

Jun 5 00:02:46.300: writing out DSP dump to file flash:dsp_crashdump-1433462566-1>

输入**show call-home diagnostic-signature statistics**命令，以验证DS是否检测到问题事件触发器：

```
Router#show call-home diagnostic-signature statistics
```

DS ID	DS Name	Triggered/ Max/Deinstall	Average Run Time(sec)	Max Run Time(sec)
10492	DS_PVDM3_DSP_Crash_Event_1	0/0/N	0.000	0.000

3900-12#

3900-12#

3900-12#

```
3900-12#show call-home diagnostic-signature statistics
```

DS ID	DS Name	Triggered/ Max/Deinstall	Average Run Time(sec)	Max Run Time(sec)
10492	DS_PVDM3_DSP_Crash_Event_1	1/0/N	15.152	15.152

Router#

验证操作

要验证DS部署，必须完成的最后一步是验证是否正确执行了以下操作：

- 命令执行
- 脚本执行
- 通过电子邮件或Smart Call Home收集的数据与收集的数据一起传输

在本示例中，发送一封电子邮件到attach@cisco.com，其中包含与DSP相关的**show**命令的输出。