

Guida all'installazione di ISR-WAAS su router ISR serie 4000

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Introduzione

In questo documento viene descritta la guida all'installazione di Cisco ISR-WAAS su Cisco Integrated Services Router (ISR). Si tratta dell'implementazione di virtual Wide Area Application Services (vWAAS) su un Cisco ISR.

ISR-WAAS viene distribuito all'interno di un contenitore IOS-XE. In questo contesto, per contenitore si intende l'hypervisor che esegue applicazioni virtualizzate su un router Cisco ISR serie 4000.

Prerequisiti per l'installazione di ISR-WAAS

Ogni versione del software WAAS può avere requisiti di risorse diversi (memoria, CPU e unità a stato solido (SSD)). Se non si soddisfano tali requisiti, possono verificarsi problemi di prestazioni o addirittura errori durante l'installazione.

Consultare la guida alla configurazione al seguente collegamento:

<https://www.cisco.com/c/en/us/support/routers/virtual-wide-area-application-services-vwaas/products-installation-and-configuration-guides-list.html>

In questa tabella vengono riepilogati i requisiti delle risorse e le piattaforme ISR supportate per ogni modello ISR.

ISR-WAAS Model	CPUs	Memory	Disk Storage	Supported ISR Platform
ISR-WAAS-200 (for WAAS 5.x and 6.2.1)	1	3 GB	151 GB	ISR-4321
ISR-WAAS-200 (for WAAS 6.2.3x and later)	1	4 GB	151 GB	ISR-4321
ISR-WAAS-750	2	4 GB	151 GB	ISR-4351, ISR-4331, ISR-4431, ISR-4451
ISR-WAAS-1300	4	6 GB	151 GB	ISR-4431, ISR-4451
ISR-WAAS-2500	6	8 GB	338 GB	ISR-4451

Differenza tra NIM-SSD e ISR-SSD

NIM-SSD

NIM-SSD è l'unità esterna all'RCI e sostituibile a caldo.

```
NAME: "NIM subslot 0/3", DESCR: "NIM SSD Module"
PID: NIM-SSD , VID: V01, SN: F0C1915299D
```

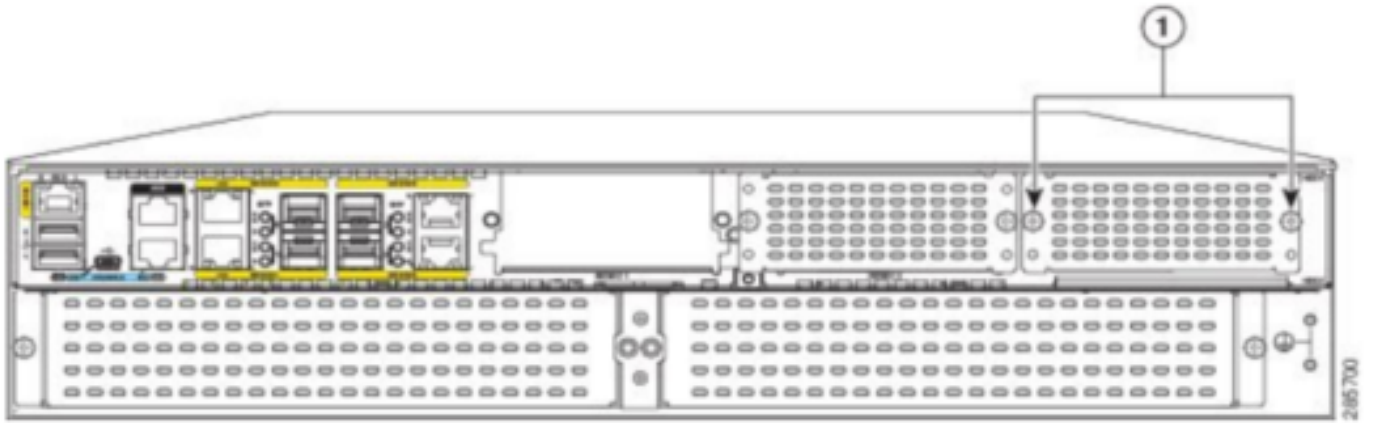
Questo è un modulo che viene installato in uno dei Network Interface Module (NIM) disponibili dei router ISR.

Questi sono identificatori di prodotto (PID) per NIM-SSD e SSD che possono essere utilizzati per aumentare la RMA:

```
NIM-SSD(=)NIM Carrier Card for SSD drives
SSD-SATA-200G(=)200 GB, SATA Solid State Disk for NIM-SSD
```

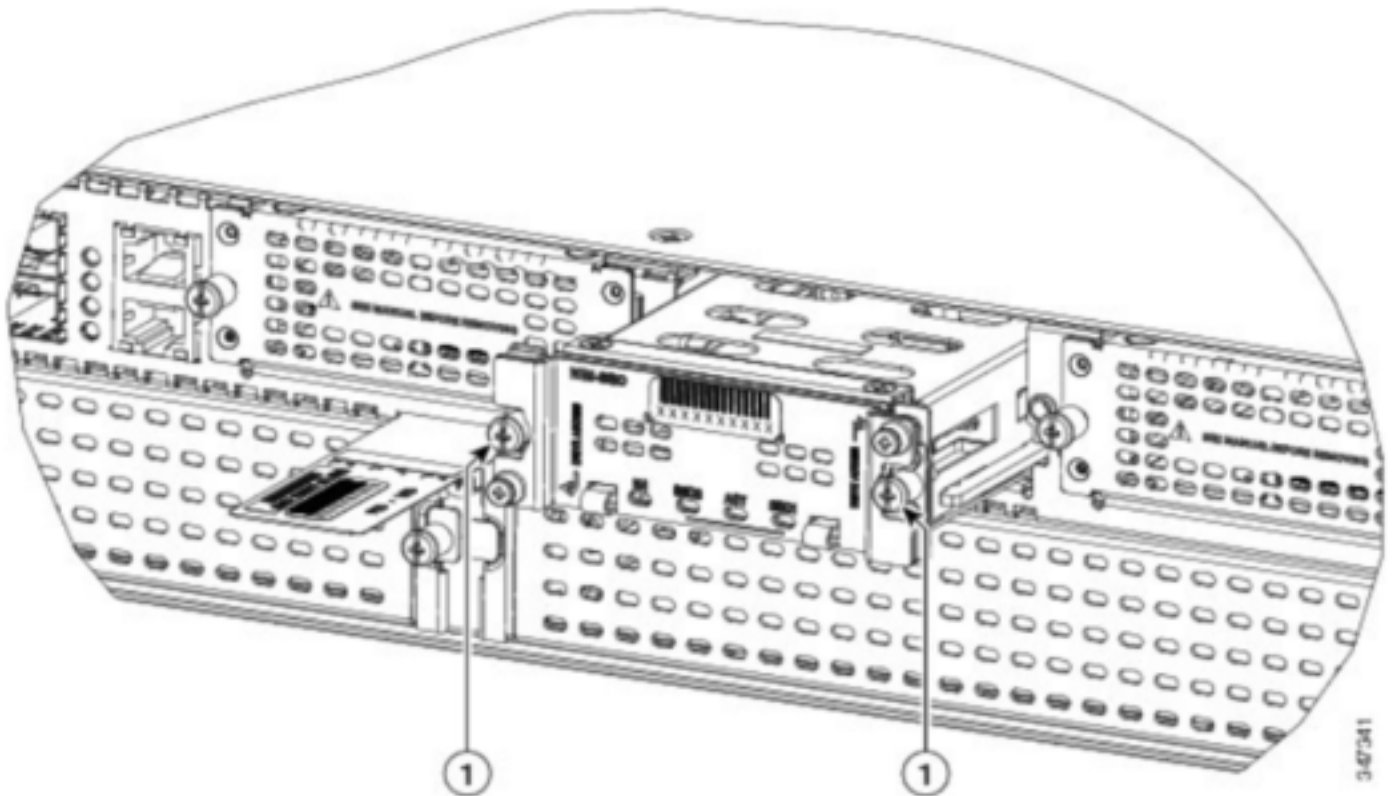
Per rimuovere NIM-SSD o NIM-HDD dal router, attenersi alla seguente procedura:

Passaggio 1. Utilizzare un cacciavite Phillips per allentare le viti di fissaggio su entrambi i lati, come mostrato nella seguente immagine:



1 Captive screws holding the NIM-SSD to the router

Passaggio 2. Rimuovere NIM-SSD o NIM-HDD dal router, come mostrato nell'immagine:



1 Captive screws holding the NIM-SSD to the router

ISR-SSD

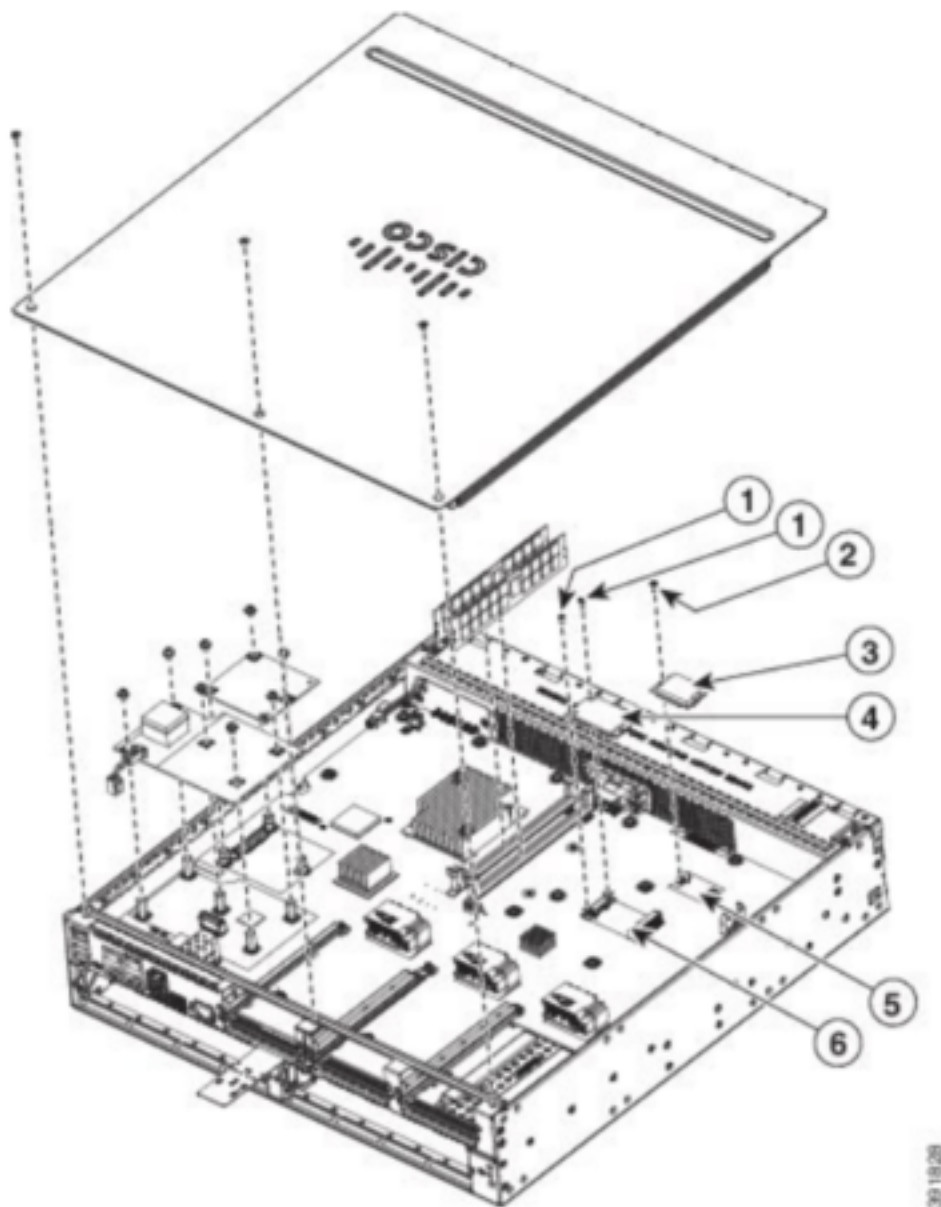
ISR-SSD invece è installato all'interno dello chassis del router, è necessario spegnere il router, aprire il coperchio per individuare l'ISR-SSD.

ISR-SSD non è sostituibile a caldo.

Questo è il PID per ISR-SSD sulla serie ISR 4300 che può essere utilizzato per aumentare la RMA:

SSD-MSATA-200G(=)200 GB, mSATA Solid State Disk

Nell'immagine sono illustrate le posizioni della scheda di memoria flash e dei dispositivi di storage SSD mSATA:



1	Supplied screw	2	Supplied screw
3	Flash memory card	4	SSD mSATA storage device
5	Flash memory card connector	6	SSD mSATA connector

Installazione ISR-WAAS

Una volta soddisfatti tutti i requisiti per l'installazione di ISR-WAAS, il passaggio successivo consiste nel scaricare un file OAV (Open Virtualization Appliance) della versione ISR-WAAS che si

intende installare. È possibile scaricare il software da questo link:

<https://software.cisco.com/download/home/280484571/type/280836712>

Una volta scaricato il software, è necessario trasferire il file nella memoria bootflash del router:

```
BR1-ISR4451#dir bootflash: | in .ova
81929  -rw-      986142720   Feb 1 2016 18:21:13 +12:00  ISR-WAAS-5.5.5a.9.ova
540682 -rw-      1057904640  May 10 2018 16:55:58 +11:00  ISR-WAAS-6.4.1a.6.ova
147457 -rw-      1002700800  Aug 20 2018 16:27:43 +11:00  ISR-WAAS-6.2.3e.45.ova
278534 -rw-      1009551360  Aug 8 2018 17:56:57 +11:00  ISR-WAAS-6.2.3d.68.ova
BR1-ISR4451#
```

Dalla CLI del router, attenersi alla seguente procedura per distribuire ISR-WAAS e utilizzare il programma EZConfig:

1. Eseguire il comando Service WAAS enable.
2. Selezionare l'immagine .ova trasferita in precedenza per la versione WAAS da distribuire.
3. Selezionare il profilo WAAS da distribuire.
4. Configurare l'indirizzo IP ISR-WAAS.
5. Configurare l'indirizzo IP di WAAS Central Manager.

```
BR1-ISR4451#service waas enable
*****
****  Entering WAAS service interactive mode.          ****
****  You will be asked a series of questions, and your answers  ****
****  will be used to modify this device's configuration to      ****
****  enable a WAAS Service on this router.              ****
*****
Continue? [y]: y
At any time: ? for help, CTRL-C to exit.
Select a WAAS image to install:
1. bootflash:/ISR-WAAS-5.5.5a.9.ova
2. bootflash:/ISR-WAAS-6.4.1a.6.ova
3. bootflash:/ISR-WAAS-6.2.3e.45.ova
4. bootflash:/ISR-WAAS-6.2.3d.68.ova
5. Enter your own image
Select option [3]: 3
Extracting profiles from bootflash:/ISR-WAAS-6.2.3e.45.ova, this may take a couple of minutes ...
These are the available profiles
1. ISR-WAAS-2500
2. ISR-WAAS-1300
3. ISR-WAAS-750
Select option [1]: 3
An internal IP interface and subnet is required to deploy a WAAS service on this router.
This internal subnet must contain two usable IP addresses that can route and communicate with the WAAS Central Manager (WCM).
The following ip address type supported for ISR-WAAS
1) ipv4
2) ipv6
Select ip address type (1 or 2):1
Enter the IPV4 address to be configured on the WAAS service: 10.66.86.44
The following ip address type supported for Host on Router
1) ipv4
2) ipv6
Select ip address type (1 or 2):1
The following ip address type for WCM
1) ipv4
2) ipv6
Select ip address type (1 or 2):1
Enter the IP address of the WAAS Central Manager (WCM): 10.66.86.106
```

6. Selezionare l'interfaccia WAN (Wide Area Network) sul router in cui si desidera abilitare l'intercettazione WAAS.
7. Al termine, salvare la configurazione. Immagine dell'installazione completata.

```

*****
** Configuration Summary: **
*****
a) WAAS Image and Profile Size:
  bootflash:/ISR-WAAS-6.2.3e.45.ova (1002700800) bytes
  ISR-WAAS-750

b) Router IP/mask:
  Using ip unnumbered from interface GigabitEthernet0/0/2

  WAAS Service IP:
  10.66.86.44

c) WAAS Central Manager:
  10.66.86.106

d) Router WAN Interfaces:
  GigabitEthernet0/0/0

Choose one of the letter from 'a-d' to edit, 'v' to view config script, 's' to apply config [s]: s
The configuration will be applied and the status of the WAAS service will be displayed after deployment

Installing bootflash:/ISR-WAAS-6.2.3e.45.ova

Installing!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!

% Activating virtual-service 'AUTOWAAS', this might take a few minutes. Use 'show virtual-service list' for progress.

System is attempting to deploy and activate WAAS image, this may take up to 10 minutes
activating!!!!!!!!!!

Waiting for WAAS application to be at a stage to accept WCM IP configuration.

Waiting!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
management services enabled

WAAS service activated!
Note:Please issue "copy running-config startup-config" command to save changes!

```

Risoluzione dei problemi di ISR-WAAS

Scenario errore installazione WAAS

L'installazione di ISR-WAAS non riesce se non è presente un'unità SSD. Verificare innanzitutto se l'unità SSD è presente.

```

GigabitEthernet0/1/0 unassigned YES unset down down
GigabitEthernet0/1/1 unassigned YES unset down down
GigabitEthernet0/1/2 unassigned YES unset down down
GigabitEthernet0/1/3 unassigned YES unset down down
ucse1/0/0 10.66.86.34 YES unset administratively down down
ucse1/0/1 unassigned YES NVRAM administratively down down
GigabitEthernet0 unassigned YES NVRAM administratively down down
Dialer0 unassigned YES unset up up
Dialer1 unassigned YES unset up up
Loopback200 unassigned YES unset up up
Tunnel0 10.66.86.61 YES unset up up
VirtualPortGroup31 10.66.86.41 YES unset down down
Vlan1 unassigned YES NVRAM administratively down down
Enter a WAN interface to enable WAAS interception (blank to skip) []: GigabitEthernet0/0/0
Enter additional WAN interface (blank to finish) []:
*****
** Configuration Summary: **
*****
a) WAAS Image and Profile Size:
  bootflash:/ISR-WAAS-6.2.3e.45.ova (1002700800) bytes
  ISR-WAAS-750

b) Router IP/mask:
  Using ip unnumbered from interface GigabitEthernet0/0/2
  WAAS Service IP:
  10.66.86.44

c) WAAS Central Manager:
  10.66.86.106

d) Router WAN Interfaces:
  GigabitEthernet0/0/0

Choose one of the letter from 'a-d' to edit, 'v' to view config script, 's' to apply config [s]: s
The configuration will be applied and the status of the WAAS service will be displayed after deployment
installation failure decision to exit
R01_TSP4451#

```

Scenario di errore attivazione ISR-WAAS

In alcuni scenari, l'attivazione di ISR-WAAS non riuscirà dopo la sostituzione del router e l'installazione dell'SSD nel nuovo chassis.

Questi errori possono essere rilevati sul router ISR:

```
09/16 11:44:08.946 [vman]: [31298]: (note): VM (AUTOWAAS) State Transition: next_state:
LIFECYCLE_DEACTIVATE

09/16 11:44:17.613 [vman]: [31298]: (ERR): Loading of machine definition (/vol/harddisk/virtual-
instance/AUTOWAAS/ISR4331X.xml) failed

09/16 11:44:17.613 [vman]: [31298]: (ERR): Failed to load machine definition

09/16 11:44:17.613 [vman]: [31298]: (note): Setting failure response (1)

09/16 11:44:17.613 [vman]: [31298]: (ERR): Virtual Service failure
log[AUTOWAAS]::Validation::Package validation::Failed to process package-def file::File
'/vol/harddisk/virtual-instance/AUTOWAAS/ISR4331X.xml'

09/16 11:44:17.613 [errmsg]: [31298]: (ERR): %VMAN-3-PROCESS_PKG_DEF: Virtual
Service[AUTOWAAS]::Validation::Package validation::Failed to process package-def file::File
'/vol/harddisk/virtual-instance/AUTOWAAS/ISR4331X.xml'

09/16 11:44:17.613 [vman]: [31298]: (note): VM (AUTOWAAS) State Transition: next_state:
LIFECYCLE_WAIT_ACTIVATE

09/16 11:44:17.613 [vman]: [31298]: (note): IF MTU message received:

09/16 11:44:17.613 [vman]: [31298]: (ERR): Invalid bridge ID or the bridge(31) has not been
created yet

09/16 11:44:17.614 [vman]: [31298]: (ERR): Failed to set DP IF mtu for DP bridge 31

09/16 11:44:17.614 [vman]: [31298]: (note): vman IF MTU message processed

09/16 11:44:24.725 [vman]: [31298]: (note): Get local RP location rp/0/0

09/16 11:44:27.758 [vman]: [31298]: (note): Get local RP location rp/0/0

09/16 11:44:27.759 [vman]: [31298]: (note): Get local RP location rp/0/0

09/16 11:44:27.772 [vman]: [31298]: (note): Get local RP location rp/0/0

09/16 11:44:27.779 [vman]: [31298]: (note): Get local RP location rp/0/0

09/16 11:44:27.779 [vman]: [31298]: (note): Successfully removed VM init ctx for VM [AUTOWAAS]

09/16 11:44:27.780 [vman]: [31298]: (note): Per-VM message marshalled successfully into
persistent DB

09/16 11:44:27.780 [vman]: [31298]: (note): Successfully reset per-VM mac address binding into
TDL msg

09/16 11:44:28.063 [vman]: [31298]: (ERR): vman_libvirt_err: code=1

09/16 11:44:28.063 [vman]: [31298]: (ERR): internal error '/usr/sbin/lvremove -f
/dev/lvm_raid/vdc.AUTOWAAS' exited with non-zero status 5 and signal 0: /dev/harddisk1: read
failed after 0 of 4096 at 21474770944: Input/output error
```

/dev/harddisk1: read failed after 0 of 4096 at 21474828288: Input/output error
/dev/harddisk1: read failed after 0 of 4096 at 0: Input/output error
/dev/harddisk1: read failed after 0 of 4096 at 4096: Input/output error
/dev/dm-1: read failed after 0 of 4096 at 4429119488: Input/output error
/dev/dm-1: read failed after 0 of 4096 at 4429176832: Input/output error
/dev/dm-1: read failed after 0 of 4096 at 0: Input/output error
/dev/dm-1: read failed after 0 of 4096 at 4096: Input/output error
/dev/dm-2: read failed after 0 of 4096 at 11072897024: Input/output error
/dev/dm-2: read failed after 0 of 4096 at 11072954368: Input/output error
/dev/dm-2: read failed after 0 of 4096 at 0: Input/output error
/dev/dm-2: read failed after 0 of 4096 at 4096: Input/output error
/dev/dm-3: read failed after 0 of 4096 at 1630
09/16 11:44:28.063 [vman]: [31298]: (ERR): Failed to delete volume vdc.AUTOWAAS in pool
virt_strg_pool_vg
09/16 11:44:28.241 [vman]: [31298]: (ERR): vman_libvirt_err: code=1
09/16 11:44:28.241 [vman]: [31298]: (ERR): internal error '/usr/sbin/lvremove -f
/dev/lvm_raid/vdb.AUTOWAAS' exited with non-zero status 5 and signal 0: /dev/harddisk1: read
failed after 0 of 4096 at 0: Input/output error
/dev/dm-1: read failed after 0 of 4096 at 0: Input/output error
/dev/dm-2: read failed after 0 of 4096 at 0: Input/output error
/dev/dm-3: read failed after 0 of 4096 at 0: Input/output error
/dev/harddisk1: read failed after 0 of 4096 at 21474770944: Input/output error
/dev/harddisk1: read failed after 0 of 4096 at 21474828288: Input/output error
/dev/harddisk1: read failed after 0 of 4096 at 4096: Input/output error
/dev/dm-1: read failed after 0 of 4096 at 4429119488: Input/output error
/dev/dm-1: read failed after 0 of 4096 at 4429176832: Input/output error
/dev/dm-1: read failed after 0 of 4096 at 4096: Input/output error
/dev/dm-2: read failed after 0 of 4096 at 11072897024: Input/output error
/dev/dm-2: read failed after 0 of 4096 at 11072954368: Input/output error
/dev/dm-2: read failed after 0 of 4096 at 4096: I
09/16 11:44:28.241 [vman]: [31298]: (ERR): Failed to delete volume vdb.AUTOWAAS in pool
virt_strg_pool_vg
09/16 11:44:28.418 [vman]: [31298]: (ERR): vman_libvirt_err: code=1
09/16 11:44:28.418 [vman]: [31298]: (ERR): internal error '/usr/sbin/lvremove -f


```
/dev/lvm_raid/vda.AUTOWAAS' exited with non-zero status 5 and signal 0: /dev/harddisk1: read failed after 0 of 4096 at 0: Input/output error
```

```
/dev/dm-1: read failed after 0 of 4096 at 0: Input/output error
```

```
/dev/dm-2: read failed after 0 of 4096 at 0: Input/output error
```

```
/dev/dm-3: read failed after 0 of 4096 at 0: Input/output error
```

```
/dev/harddisk1: read failed after 0 of 4096 at 21474770944: Input/output error
```

```
/dev/harddisk1: read failed after 0 of 4096 at 21474828288: Input/output error
```

```
/dev/harddisk1: read failed after 0 of 4096 at 4096: Input/output error
```

```
/dev/dm-1: read failed after 0 of 4096 at 4429119488: Input/output error
```

```
/dev/dm-1: read failed after 0 of 4096 at 4429176832: Input/output error
```

```
/dev/dm-1: read failed after 0 of 4096 at 4096: Input/output error
```

```
/dev/dm-2: read failed after 0 of 4096 at 11072897024: Input/output error
```

```
/dev/dm-2: read failed after 0 of 4096 at 11072954368: Input/output error
```

```
/dev/dm-2: read failed after 0 of 4096 at 4096: I
```

```
09/16 11:44:28.418 [vman]: [31298]: (ERR): Failed to delete volume vda.AUTOWAAS in pool virt_strg_pool_vg
```

```
09/16 11:44:28.420 [vman]: [31298]: (note): Found orphaned volume(vda.AUTOWAAS) in pool(virt_strg_pool_vg). Deleting...
```

È possibile che il disco rigido sia danneggiato e che vengano eseguite le seguenti operazioni:

```
# show platform hardware subslot <ssd subslot> module device filesystem
```

```
# request platform hardware filesystem harddisk: destroy
```

```
# hw-module subslot 0/5 reload
```

Scenario errore SSD

In alcuni casi, se l'unità SSD è guasta mentre si eseguono comandi relativi al disco rigido e al file system, si verificano questi errori.

```
"request platform hardware filesystem harddisk: destroy"  
%This operation can take some time, please be patient  
%Harddisk not present. Destroy filesystem aborted.
```

Per risolvere il problema, provare la seguente procedura:

Passaggio 1. Provare a ricollocare l'SSD.

Passaggio 2. Riavviare il router.

Passaggio 3. Se questi passaggi non sono riusciti, eseguire l'autorizzazione al reso (RMA) per l'unità SSD.