



InfoScale Availability Agent for Fujitsu REC Installation and Configuration Guide

Windows

7.1

InfoScale Availability Agent for Fujitsu REC

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About the agent for Fujitsu REC

The InfoScale Availability (formerly Veritas Cluster Server – VCS) agent for Fujitsu Remote Equivalent Copy (REC) provides support for application failover and recovery. The agent provides this support in environments that use REC to replicate data between Fujitsu ETERNUS devices.

This document henceforth refers to this agent as the REC agent.

The REC agent monitors and manages the state of replicated ETERNUS devices that are attached the InfoScale Availability cluster nodes. The agent ensures that the system that has the REC resource online also has safe and exclusive access to the configured ETERNUS devices.

The REC agent supports the following configurations:

- Global clusters that run InfoScale Availability
- Fujitsu REC between ETERNUS devices in synchronous mode only

REC agent functions

The REC agent monitors replication between disk devices so that a node in a global cluster can safely and exclusively access the connected ETERNUS device. The agent links with ETERNUS SF AdvancedCopy Manager Copy Control Module (CCM) to control REC between ETERNUS devices. The agent does not monitor the copy progress, but manages the replication only for the synchronous mode.

The REC agent performs the following functions:

Function	Description
online	<ul style="list-style-type: none">• When all local devices are REC destination and in the Equivalent state, the agent suspends REC to make local devices read-write enabled and reverses the replication direction. Then if the AutoFailback attribute is set to 1 (default), the agent resumes REC.• When all local devices are REC source, they are read-write enabled and the agent does not do anything. <p>When the following are included in the local devices, the online operation fails.</p> <ul style="list-style-type: none">• Mixture of REC destination and REC source• REC destination and REC state is not in the Equivalent state <p>When succeeding in online operations, the agent creates a lock file on the local host. The lock file indicates that the resources are online.</p>

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Function	Description
offline	The agent removes the lock file on the local host, but does not perform operations related to REC. Taking the resource offline is not indicative of an intention to give up the devices. (Agent does not stop replication or reverse the direction, it only stops monitoring the activity.)
monitor	Checks whether the lock file exists on the local host. If the lock file exists and the REC state of local devices is EC Executing or EC suspend, the monitor entry point reports the status of the resource as online. If the lock file does not exist or the REC state of local devices is Error Suspend or Hardware Suspend, the monitor entry point reports the status of the resource as offline.
clean	When the online operation fails or times out, clean entry point removes lock file. When removing, verifies the REC state of the local device and if there is an abnormality, an error message is output.
open	Removes the lock file from the local host on which this entry point is called. This functionality prevents potential concurrency violation if the group fails over to another node. Note that the agent does not remove the lock file if the agent was started after running the <code>hastop -force</code> command.
action/failback	If the AutoFailback attribute is set to 0, with the online operation, REC is not restarted (resumed) after reversing the REC direction. In this case, it is necessary to restart REC using this operation.

Supported software

For information on the software versions that the REC agent supports, see the Veritas Services and Operations Readiness Tools (SORT) site:

<https://sort.veritas.com/agents>

Supported hardware for Fujitsu REC

For information on ETERNUS devices that support REC, see the Fujitsu site:

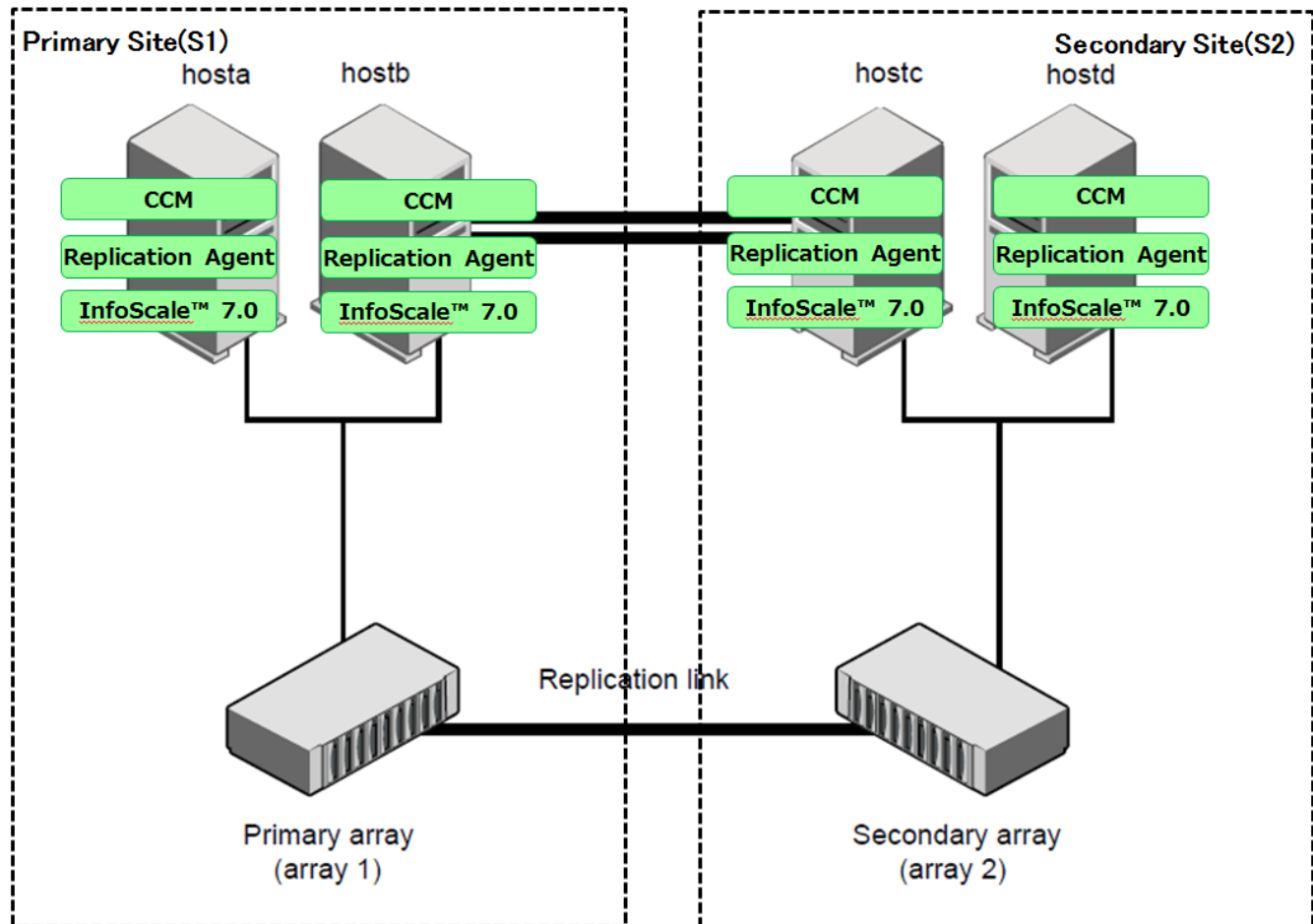
<http://www.fujitsu.com/global/products/computing/storage/disk/eternus-dx/feature/strsys-i02.html>

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Typical configuration

The following figure depicts a typical REC agent configuration in a replication environment:



Setting up replication for high availability

To use the REC agent, you must first set up replication in the InfoScale Availability global cluster environment.

To set up the Fujitsu replication environment for high availability (HA)

1. Configure replication for the application that you want to make highly available.
 - a. Install and configure InfoScale Availability on S1 (Site 1) and configure the application for HA.
 - b. Install and configure the application on S2 (Site 2).
 - c. Configure data replication between S1 and S2.

For details, see "Setting up replication with REC" on page 6.

2. Configure the cluster.

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- a. Configure the global cluster components on S1.
 - b. Install and configure InfoScale Availability on S2.
 - c. Secure clusters and communication between wide area connectors on S1 and S2.
 - d. Configure the remote cluster objects on S1 and S2.
3. Configure the service group.
 - a. Configure the application service group on S2.
 - b. Install and configure the replication agent on S1 and S2.
For details, see “Installing the REC agent” on page 7.
 4. Configure the global group: make the service group a global group on S1 and S2.
For details, see the *Cluster Server Administrator's Guide*.

Setting up replication with REC

To set up replication, configure the REC settings, install and configure CCM, and start the REC copy from a cluster node.

To set up replication with REC

1. Log in to the ETERNUS hardware GUI and configure the REC route settings and the REC buffer settings.
2. Install CCM on each node in the global cluster.
For details, see the *ETERNUS SF AdvancedCopy Manager Installation and Setup Guide*.

3. Configure CCM on each node in the global cluster as follows:
 - a. Create the user account for storage registration to use CCM.
 - b. Configure the access volume for providing AdvancedCopy instructions (required only in case of SAN).
 - c. Register the ETERNUS SF AdvancedCopy Manager Remote Copy License.
 - d. Register the primary site and secondary site ETERNUS disk storage system on CCM.
 - e. Create the REC type copy group on each cluster node using the following command:

```
acgroup create -g CopyGroup -type REC -a DiskArrayName -remote  
RemoteDiskArrayName
```

The *CopyGroup* name is the common name of all nodes in the global cluster.

For example:

```
# acgroup create -g RECGroup -type REC -a ET001 -remote ET002  
Successful completion.  
#
```

- f. Create the copy pair and add it to the copy group using the following command:

```
acpair add -g CopyGroup [-p PAIR]
```

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For example:

```
# acpair add -g RECGroup -p ET001/0x0000:ET002/0x0003
```

Successful completion.

```
#
```

The copy pair gets created as follows:

Primary site copy pair	Secondary site copy pair
ET001/0x0000:ET002/0x0003	ET002/0x0003:ET001/0x0000

The substrings separated by / or : in the primary site copy pair string pertain to the following entities:

- ET001: Copy source ETERNUS name
- 0x0000: Copy source logical volume number
- ET002: Copy destination ETERNUS name
- 0x0003: Copy destination logical volume number

4. Start REC copy from the active node.

```
# acec start -g RECGroup -transfer sync
```

```
ET001/0x0000:ET002/0x0003
```

```
# DATE: 2016/10/09 12:33:02 - << EC Started >>
```

```
# From: BoxID=303045123/Olu=0/Adr_high=0/Adr_low=0/size_high=0/size_low=0
```

```
# To: BoxID=303045523/Olu=3/Adr_high=0/Adr_low=0
```

```
Succeeded      : 1
```

```
Failed        : 0
```

```
#
```

Installing the REC agent

You must install the REC agent on each node in the cluster. In global cluster environments, install the agent on each node in each cluster.

To install the REC agent

1. Log on to cluster node as a user with Administrator privileges.
2. Copy the `vrtsvcsrec.msi` file to a local folder.
3. Double-click `vrtsvcsrec.msi` and follow the wizard prompts to complete the installation.

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The default installation destination is: C:\Program Files\VERITAS\.

The REC agent components are deployed as follows:

File path	Description
VRTSPerl directory	
lib\	Directory in which modules are stored
lib\REC.pm	Common function modules
Cluster Server directory	
conf\Sample_REC\	Directory in which the definition files are stored
conf\Sample_REC\RECTypes.cf	Resource type definition file
bin\REC\	Directory in which the scripts/executable files are stored
bin\REC\REC.xml	Resource information file
bin\REC\online.pl	Entry point online script
bin\REC\offline.pl	Entry point offline script
bin\REC\monitor.pl	Entry point monitor script
bin\REC\open.pl	Entry point open script
bin\REC\clean.pl	Entry point clean script
bin\REC\actions\failback.pl	Entry point failback script

Configuring the REC agent

To make your application highly available using InfoScale Availability, you must configure the agent by specifying its attribute values in the appropriate configuration files and the configuring the service group.

To configure the REC agent

1. Specify that the appropriate attribute values are set in the RECTypes.cf file.

For details, see “REC agent attributes” on page 9.

2. Verify the appropriate value for GrpName in the main.cf file.

You can verify the attribute values in both, the agent configuration file (RECTypes.cf) as well as the cluster configuration file (main.cf). The values in the cluster configuration file override the values that are set in an agent configuration file. Therefore, you may use RECTypes.cf to define the default values, and then specify different attributes values as required in main.cf.

For more information, see “Sample configuration” on page 11.

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3. Configure the service group.
 - a. Log on to the cluster using the Cluster Manager.
 - b. Add the REC type resource to the service group using the replication data.
 - c. Define the REC resource attributes.
 - d. To propagate this information to the nodes that are connected to the same storage, configure the `SystemZones` attribute of the service group.

REC agent attributes

The REC agent attributes and their values are specified in the `RECTypes.cf` file.

The following REC agent attribute is required:

Required attribute	Description
Name: GrpName Type: string Dimension: keylist	Name of the replication copy group administered by the Agent. This copy group name uses the name created by CCM. Veritas recommends that you configure the value definitions in <code>main.cf</code> . Default: "" (empty)

The following REC agent attributes are optional:

Optional attribute	Description
Name: CCMCliHome Type: string Dimension: scalar	CCM installation destination Default: <code>C:\ETERNUS_SF\CCM\bin</code>
Name: LinkMonitor Type: scalar Dimension: boolean	Specifies whether to monitor the REC state at the monitor entry point. 0: Do not monitor 1: Monitor Default: 0
Name: AutoFailback Type: scalar Dimension: boolean	As an extension of the Online operation, resume REC after takeover by default. When 0 is specified, REC is not resumed after takeover, and when resuming it is necessary to perform action/failback entry point manually. 0:OFF 1:ON Default: 1

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Optional attribute	Description
Name: CheckRECStart Type: scalar Dimension: boolean	<p>Specifies whether the agent checks that REC has started or not.</p> <p>If set to 0, the agent does not check whether REC has started or not, and so the agent reports it as online even if REC has not started.</p> <p>If set to 1, the agent checks whether REC has started, and if not, the agent reports it as offline. InfoScale Availability cannot automatically bring the faulted global service group online at secondary site, because REC cannot be started. Therefore, CheckRECStart is recommended to be set to 0 at the secondary site after the service group is online at the primary site.</p> <p>Default: 1</p>

Resource type definition

```
type REC (  
    static keylist SupportedActions = {failback}  
    static int MonitorInterval = 300  
    static int NumThreads = 1  
    static int ActionTimeout = 150  
    static int OpenTimeout = 180  
    static int OnlineTimeout = 300  
    static str AgentDirectory = "C:\\Program Files\\VERITAS\\Cluster  
server\\bin\\REC"  
    static str ArgList[] = { CCMcliHome, GrpName, LinkMonitor, AutoFailback,  
CheckRECStart }  
    str CCMcliHome = "C:\\ETERNUS_SF\\CCM\\bin"  
    str GrpName[]  
    boolean LinkMonitor = 0  
    boolean AutoFailback = 1  
    boolean ChecRECStart = 1  
    temp str VCSResLock  
)
```

Sample configuration

A sample configuration as defined in a `main.cf` file is as follows:

```
include "types.cf"

cluster VGC2 (
    UserNames = { a = bbbb }
    ClusterAddress = "192.168.120.240"
    Administrators = { a }
)

remoteclass VGC (
    ClusterAddress = "192.168.120.200"
)

heartbeat Icmp (
    ClusterList = { VGC }
    Arguments @VGC = { "192.168.120.200" }
)

system RX300S6-6 (
)

group ClusterService (
    SystemList = { RX300S6-6 = 0 }
    AutoStartList = { RX300S6-6 }
)

IP csg_ip (
    Address = "192.168.120.240"
    SubNetMask = "255.255.255.0"
    MACAddress @RX300S6-6 = "00:19:99:C9:C2:B9"
)
```

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```
NIC csg_nic (  
    MACAddress @RX300S6-6 = "00:19:99:C9:C2:B9"  
)
```

```
NotifierMngr ntfr (  
    SnmpConsoles = { "rx300s6-6.fujitsu.com" = Information }  
)
```

```
Process wac (  
    StartProgram @RX300S6-6 = "\"C:\\Program Files\\Veritas\\Cluster  
Server\\bin\\wac.exe\""  
    StopProgram @RX300S6-6 = "\"C:\\Program Files\\Veritas\\Cluster  
Server\\bin\\wacstop.exe\""  
    MonitorProgram @RX300S6-6 = "\"C:\\Program Files\\Veritas\\Cluster  
Server\\bin\\wacmonitor.exe\""  
)
```

csg_ip requires csg_nic

ntfr requires csg_nic

wac requires csg_ip

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```
// resource dependency tree
//
//   group ClusterService
//   {
//     NotifierMngr ntfr
//     {
//       NIC csg_nic
//     }
//     Process wac
//     {
//       IP csg_ip
//       {
//         NIC csg_nic
//       }
//     }
//   }
// }
```

```
group stsg (
  SystemList = { RX300S6-6 = 0 }
  ClusterList = { VGC2 = 0, VGC = 1 }
  Authority = 1
)
```

```
MountV Thick1 (
  MountPath = E
  VolumeName = FTV_thickV
  VMDGResName = VMDg1
)
```

```
REC CCM (
  GrpName = { rep_grp }
  LinkMonitor = 1
  CheckRECStart = 0
)
```

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```
VMDg VMDg1 (  
    DiskGroupName = FTV_thick  
)
```

Thick1 requires VMDg1

VMDg1 requires CCM

```
// resource dependency tree  
//  
//    group stsg  
//    {  
//        MountV Thick1  
//        {  
//            VMDg VMDg1  
//            {  
//                REC CCM  
//            }  
//        }  
//    }  
// }
```

REC agent log messages

Messages in the logs are categorized according to their severity as follows:

Message level	Severity	Classification rule	Range
E	Error	Online or offline operation has failed.	100-299
W	Warning	The command completed normally, but it has a status that does not affect the operation results.	300-499
I	Information	Information is logged when the operation is successful.	500-699

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About Veritas Technologies LLC

Veritas Technologies LLC enables organizations to harness the power of their information, with solutions designed to serve the world's largest and most complex heterogeneous environments. Veritas works with 86 percent of Fortune 500 companies today, improving data availability and revealing insights to drive competitive advantage.

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