



Netra High Availability Suite Foundation Services 2.1 6/03 Glossary

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Preface

The Netra High Availability Suite Foundation Services 2.1 6/03 Glossary *Netra High Availability Suite Foundation Services 2.1 6/03 Glossary* defines the specialized terms used in the Netra™ High Availability (HA) Suite Foundation Services 2.1 6/03 documentation set.

Who Should Use This Book

This book is for system administrators who are maintaining a cluster running the Foundation Services, or for system developers who are developing applications for a cluster running the Foundation Services.

How This Book Is Organized

This book is an alphabetical list of terms used in the Foundation Services documentation set. There is a chapter for each letter of the alphabet for which a term is defined.

Related Books

You will require some of the following books from the Foundation Services documentation set:

- *Netra High Availability Suite Foundation Services 2.1 6/03 Overview*
- *Netra High Availability Suite Foundation Services 2.1 6/03 Glossary*
- *What's New in Netra High Availability Suite Foundation Services 2.1 6/03*
- *Netra High Availability Suite Foundation Services 2.1 6/03 Quick Start Guide*
- *Netra High Availability Suite Foundation Services 2.1 6/03 Hardware Guide*
- *Netra High Availability Suite Foundation Services 2.1 6/03 Custom Installation Guide*
- *Netra High Availability Suite Foundation Services 2.1 6/03 Cluster Administration Guide*
- *Netra High Availability Suite Foundation Services 2.1 6/03 Troubleshooting Guide*
- *Netra High Availability Suite Foundation Services 2.1 6/03 CMM Programming Guide*
- *Netra High Availability Suite Foundation Services 2.1 6/03 NMA Programming Guide*
- *Netra High Availability Suite Foundation Services 2.1 6/03 Reference Manual*
- *Netra High Availability Suite Foundation Services 2.1 6/03 Standalone CGTP Guide*
- *Netra High Availability Suite Foundation Services 2.1 6/03 Release Notes*
- *Netra High Availability Suite Foundation Services 2.1 6/03 README*

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A

actual priority	<p>The priority of the Foundation Services processes compared to other system processes. The actual priority of a process is a function of its base priority and its relative priority:</p> $\text{actual priority} = \text{base priority} + \text{relative priority}$ <p>See also base priority and relative priority.</p>
address triplet	<p>An addressing schema that assigns each peer node an IP address for the following interfaces:</p> <ul style="list-style-type: none">■ Interface of the first redundant network, <i>NIC0</i>■ Interface of the second redundant network, <i>NIC1</i>■ Virtual interface for CGTP, <i>cgtp0</i> <p>See also floating address triplet.</p>
administrative attribute	<p>The external management viewpoint of a node.</p>
amnesia	<p>An error scenario in which a cluster restarts with stale cluster configuration data.</p>
availability	<p>The probability that a service is available for use at any given time.</p> <p>See also redundancy, reliability, and serviceability.</p>

B

base priority	One part of the actual priority of the Foundation Services processes: actual priority = base priority + relative priority See also actual priority and relative priority .
bitmap partition	A disk partition that contains the scoreboard bitmap for a data partition on the same disk. See also data partition and scoreboard bitmap .
boot policy	The method of starting a diskless node at cluster startup. See also DHCP client ID , DHCP dynamic , and DHCP static .

C

cascade	The transfer of statistics from the Node Management Agent (NMA) on each of the peer nodes into the namespace of the master node. Cascading provides the NMA of the master node with a view of the entire cluster.
CGTP	(Carrier Grade Transport Protocol) A reliable transport protocol used for the transfer of IP packets over a cluster network. CGTP duplicates data packets. It transmits the duplicate data packets on both of the Ethernet networks. If one data packet is lost, the data packet sent on the second network path is able to reach the destination address.
CGTP address	The IP address of a CGTP interface. See also CGTP interface .
CGTP interface	An interface over which IP packets are transferred by using the CGTP protocol. See also CGTP and virtual physical interface .
cluster	A group of peer nodes that are connected by a network. To be highly available, a cluster must have the following characteristics: <ul style="list-style-type: none">■ A master node■ A vice-master node■ Data replication between the master node and vice-master node■ A redundant network between all peer nodes See also peer node , master node , and vice-master node .
Cluster Membership Manager	See CMM .
cluster network	The private network over which peer nodes communicate with each other.

	See also external network .
cluster_nodes_table	A configuration file that stores the membership and configuration information for all peer nodes in a cluster. A node must have an entry in the <code>cluster_nodes_table</code> file to be part of a cluster. There is a <code>cluster_nodes_table</code> on both master-eligible nodes in the cluster.
CMM	(Cluster Membership Manager) A service that manages the cluster membership. The CMM performs the following tasks: <ul style="list-style-type: none"> ■ Determines which nodes are members of the cluster ■ Assigns the roles and attributes of nodes ■ Detects the failure of nodes ■ Notifies clients of changes to the cluster
CompactPCI	(Compact Peripheral Component Interconnect)
CompactPSB	(CompactPCI Packet Switched Backplane)
custom installation	Manual installation or installation using the <code>nhinstall</code> tool. See also nhinstall .

D

Daemon Monitor	A service that monitors the Foundation Services daemons, many Solaris operating system daemons, and some companion products daemons.
dataless node	A peer node that boots from its local disk. A dataless node runs customer applications locally, but accesses the Foundation Services through the cluster network. Data generated on dataless nodes is sent to the master node. A dataless node cannot be the master node or the vice-master node. See also diskless node .
data partition	A disk partition that contains data. A data partition is mirrored from the master node to the vice-master node. For a data partition on a physical disk to be mirrored, it must have an associated bitmap partition. See also bitmap partition .
deployment	The installation and deployment of the Foundation Services. Deployment is used as a generic term for installation and deployment. There is no difference between the methods of installation and deployment, except that deployment also includes the redeployment and reconfiguration of flash archives.
development host	A system used to develop an application.
DHCP	(Dynamic Host Configuration Protocol) A TCP/IP protocol that enables machines to obtain IP addresses statically or dynamically from centrally administered servers.
DHCP client ID	A boot policy that associates a <code>CLIENT_ID</code> string with a diskless node. See also DHCP dynamic and DHCP static .

DHCP dynamic	<p>A boot policy that creates a dynamic map between the Ethernet address of a diskless node and an IP address taken from a pool of available addresses.</p> <p>See also DHCP client ID and DHCP static.</p>
DHCP static	<p>A boot policy that maps the Ethernet address of a diskless node to a fixed IP address.</p> <p>See also DHCP client ID and DHCP dynamic.</p>
direct link	<p>A link between the serial ports on the master-eligible nodes. The direct link prevents the occurrence of split brain when the network between the master node and vice-master node fails.</p>
diskfull node	<p>A peer node that contains at least one disk on which applications can run and information can be permanently stored. Master-eligible nodes are diskfull nodes. Dataless nodes are not considered to be diskfull nodes.</p> <p>See also diskless node and dataless node.</p>
diskless node	<p>A peer node that does not have a local disk or is not configured to use its local disk. Diskless nodes boot through the network, using the master node as a boot server. Diskless nodes run customer applications locally, but access the Foundation Services through the cluster network. Data generated on diskless nodes is sent to the master node. A diskless node cannot be the master node or the vice-master node.</p> <p>See also diskfull node and dataless node.</p>
disqualified	<p>A master-eligible node that cannot participate in an election for the master role or vice master role. Disqualified is a state used by the Cluster Membership Manager.</p>
distributed services	<p>Services that run on all peer nodes. The distributed services include the Cluster Membership Manager, the Node State Manager, the Node Management Agent, the Daemon Monitor, and the Watchdog Timer.</p> <p>See also highly available services.</p>
<i>domainid</i>	<p>(domain identification number)</p> <p>The number that identifies a cluster. The <i>domainid</i> is the same for each peer node in a cluster.</p> <p>See also nodeid.</p>
double fault	<p>The simultaneous failure of both master-eligible nodes, or the simultaneous failure of both redundant networks.</p>

downtime

The percentage of time that a system is unavailable, including attributable, scheduled, unscheduled, total, and partial system outages. Downtime also includes outages caused by operational error.

See also [availability](#) and [outage](#).

E

eligible	See master-eligible node .
Ethernet address	A 48-bit address used to direct datalink layer transactions. The Ethernet address is synonymous with the MAC address.
external address	An IP address visible on the external network, that is assigned to a logical interface or physical interface on a peer node. See also floating external address .
external network	A network that is not part of the cluster network. An external network can be Ethernet, ATM, or any other network type supported by the Solaris operating system. An external network can be connected to the cluster network. See also cluster network .

F

failover	<p>The transfer of services from the master node to the vice-master node when the master node fails. The vice-master node must have all of the necessary state information to take over at the moment of failover. The vice-master node expects no cooperation or coordination from the failed master node.</p> <p>See also switchover.</p>
FC-AL	(Fibre Channel-Arbitrated Loop)
floating address triplet	<p>A logical address triplet for the node holding the master role. Diskless nodes and dataless nodes access services and data on the master node through the floating address triplet.</p> <p>See also address triplet.</p>
floating external address	A logical address visible on the external network that is assigned to an interface on the node holding the master role.
Foundation Services	<p>The basic set of services provided by the Foundation Services product. The Foundation Services include the following services:</p> <ul style="list-style-type: none"> ■ CGTP ■ Reliable NFS ■ Cluster Membership Manager ■ Reliable Boot Service ■ Daemon Monitor ■ Node State Manager ■ Watchdog Timer ■ Node Management Agent

H

HA-aware applications	Applications that are aware of the availability of nodes and resources. The resources can be other application components, communication end points, processes, or groups of resources. An application that is HA-aware is designed to recover from a failure.
heartbeat	An IP packet that is periodically multicast through each of the two physical interfaces of each peer node. When a heartbeat is detected through a physical interface, it indicates that the node is reachable and that the physical interface is alive. Heartbeats are multicast by the <code>nhprobed</code> daemon and detected by the <code>nhprobed</code> daemon.
highly available services	Services that run on the master node and vice-master node only. The Reliable Boot Service and Reliable NFS are highly available services. If the master node or one of these services on the master node fails, a failover occurs. See also distributed services .
HME	An Ethernet card driver.
horizontal scalability	The ability to add nodes to a cluster to increase the processing capacity of the system.
host part	The second part of an Internet address. The host part of an IP address identifies a node on a given network. See also netmask and network part .
hot-swap	The removal and replacement of a hardware component or board without shutting down the entire system.

I

in node	<p>A peer node that is using the Foundation Services and can communicate with other peer nodes. An “in node” can be a master-eligible node, a diskless node, or a dataless node. The master node and vice-master node must always be “in nodes”.</p> <p>See also out node.</p>
installation server	<p>Installation hardware required by the <code>nhinstall</code> tool, and to install manually. An installation server installs the software load onto the cluster by using the Solaris JumpStart™ software. The installation server can be a portable machine.</p>
IP	<p>(Internet Protocol)</p>
IP mirroring	<p>See replication.</p>
IPMP	<p>(IP multipathing)</p> <p>A system that enables a server to have multiple network ports connected to the same subnet.</p>

J

Java Dynamic Management Kit

The fundamental framework for developing distributed Java™
management applications.

L

logical address	<p>A supplementary address on a physical interface or virtual interface of a node. One physical interface or virtual interface can have many logical addresses.</p> <p>See also physical address and virtual address.</p>
logical interface	<p>A logical interface configured on a physical interface or virtual interface of a node. A logical interface on an <code>hme0</code> or <code>cgtp0</code> interface might be called <code>hme0:1</code> or <code>cgtp0:1</code>.</p>

M

MAC address	(Medium Access Control address) See Ethernet address .
master node	The node that coordinates all the cluster membership information. The primary instance of Reliable NFS and the Reliable Boot Service run on the master node. There is only one master node in a cluster. See also node and vice-master node .
master-eligible node	A peer node that can be elected as the master node or the vice-master node. In the Foundation Services, master-eligible nodes are always diskfull. See also master-ineligible node .
master-ineligible node	A node that <i>cannot</i> perform the role of master node or vice-master node. In the Foundation Services, master-ineligible nodes are always diskless or dataless. See also master-eligible node .
MBean	(management bean) A Java interface that conforms to design patterns that expose attributes and operations to the Node Management Agent (NMA). These attributes and operations enable the NMA to recognize and manage the MBean. MBeans are defined by the JMX™ specification. For more information, go to http://java.sun.com .
MIB	(Management Information Base)
monitored daemons	Daemons that are monitored by the Daemon Monitor.

N

nametag	<p>A Daemon Monitor nametag that regroups a process tree. A nametag corresponds to a daemon or a group of daemons launched by a startup script.</p> <p>See also Daemon Monitor and startup script.</p>
netmask	<p>A number that defines how many of the upper bits of an IP address identify a network. In class C addresses, the netmask is 24 bits. The upper 24 bits of a class C address identify the network, and the lower 8 bits identify the node.</p> <p>See network part and host part.</p>
network	See also cluster network and external network .
network part	<p>The upper part of an IP address. The network part of an IP address identifies the network on which a node resides.</p> <p>See also host part and netmask.</p>
nhinstall	A tool that facilitates the installation and configuration of the Foundation Services, the Solaris operating environment, and optionally, user applications on a cluster.
NIC	(network interface card)
NMA	<p>(Node Management Agent)</p> <p>A service that monitors cluster statistics, initiates a switchover, changes the recovery response for daemon failure, and listens for notifications of some cluster events. The NMA is a JMX compliant management agent based on the Java Dynamic Management Kit.</p>
node	<p>The basic unit of hardware on which the Foundation Services run. A node is generally a single-board computer equipped with a CPU, memory, and I/O. A node can also contain some secondary storage in the form of flash or compact flash memory.</p>

	See also master node , peer node , and nonpeer node .
node address triplet	See address triplet .
<i>nodeid</i>	(node identification number) The number that identifies a node within a cluster. See also domainid .
Node Management Agent	See NMA .
Node State Manager	See NSM .
nonpeer node	A node that is not configured as a member of a cluster. A nonpeer node can communicate with one or more peer nodes to access resources or services provided by a cluster.
	See also node and peer node .
nonshared packages	Packages that are not shared between the master node and the vice-master node. Nonshared packages must be added to both master-eligible nodes.
	See also shared packages .
notification	An information message sent by the <code>nhcmmmd</code> daemon on a local node to services or applications registered to receive it.
NSM	(Node State Manager) A service that configures a floating external address for an external interface on the master node. After a failover or switchover, the NSM configures a floating external address for an external interface on the new master node. See also floating external address , master node , failover , and switchover .

O

outage	An event that impairs the ability of a system to operate at its rated capacity for more than 30 seconds.
out node	A peer node on which the Foundation Services are not running and that cannot be reached by the master node.

P

PCI	(Peripheral Component Interconnect)
peer node	A node that is configured to run the Foundation Services. See also cluster_nodes_table , nonpeer node , and node .
physical address	The IP address of a physical interface. See also physical interface .
physical interface	A network interface card (NIC). The name of the interface depends on the type of network card that is used. A node could have network interfaces called hme0 and hme1.
PMC	(PCI Mezzanine Card)
predefined node	A node that is defined as part of a cluster but that has not been physically connected to the cluster. A predefined node is a peer node with an out-of-cluster role. See also peer node and out node .

Q

QFE

(Quad-Fast Ethernet)

R

recovery	<p>The restoration of system operation to full capacity or partial capacity. During recovery, a system performs the following tasks:</p> <ul style="list-style-type: none"> ■ Reassigns resources to restore the system to operational state ■ Repairs any parts that were adversely affected by the failure
redundancy	<p>The provision of a backup node to take over in the event of failure. The Foundation Services use the 2N redundancy model.</p> <p>See also availability, reliability, and serviceability.</p>
relative priority	<p>The priority of one of the Foundation Services processes compared to another. In descending order of priority, the Foundation Services daemons have the following relative priority: nhpmd > nhwdtd > nhprobed > nhcmmd > nhcrfsd > nhnsmd.</p> <p>See also actual priority and base priority.</p>
reliability	<p>The measure of continuous system uptime.</p> <p>See also availability, redundancy, and serviceability.</p>
Reliable Boot Service	<p>A service that uses the Dynamic Host Configuration Protocol (DHCP) and the other Foundation Services to ensure the boot of diskless nodes regardless of software failures or hardware failures.</p>
Reliable NFS	<p>A service that provides a mounted file system to make data on the master node accessible to other cluster nodes. Reliable NFS mirrors disk-based data on the master node to the vice-master node, and reconfigures the floating address triplet after failover or switchover.</p>
replication	<p>The copying of data from the master node to the vice-master node. Through replication, the vice-master node keeps an up-to-date copy of the data on the master node.</p> <p>See also synchronization.</p>

role

A membership role allocated by the Cluster Membership Manager.

See also [in node](#), [out node](#), [master node](#), and [vice-master node](#).

S

scheduling parameter	<p>A parameter that represents the priority with which competing services run. The scheduling parameter is defined in the <code>nhfs.conf</code> file.</p> <p>See also actual priority, base priority, and relative priority.</p>
scoreboard bitmap	<p>A file that identifies which data blocks on a replicated partition are modified while the vice-master node is out of service.</p> <p>See also replication and bitmap partition.</p>
SCSI	(Small Computer System Interface)
serviceability	<p>The probability that a service can be restored within a specified period of time following a service failure.</p> <p>See also availability, redundancy, and reliability.</p>
shared packages	<p>Packages that are located on the master node and replicated on the vice-master node. Shared packages can include the Foundation Services packages and user applications.</p> <p>See also nonshared packages.</p>
single fault	<p>The failure of a master-eligible node, the failure of a service, or the failure of one of the redundant networks.</p> <p>See also double fault.</p>
SNDR	(Sun StorEdge™ Network Data Replicator)
SNMP	(Simple Network Management Protocol)
soft partition	<p>A disk partition on a virtual disk.</p> <p>See also virtual disk.</p>
split brain	An error scenario in which a cluster has two master nodes.

stale cluster	An error scenario in which a peer node does not receive information from the master node for more than 10 seconds.
standalone CGTP	CGTP running on nonpeer nodes. See also CGTP and nonpeer node .
startup script	A script that launches the Foundation Services daemons, the Solaris operating system daemons, and some companion product daemons. See also Daemon Monitor and nametag .
subnet	See network part .
switchover	The planned transfer of a service from the master node to the vice-master node. A switchover can be initiated for the purpose of system recovery or system administration. A switchover is not linked to node failure. See also failover .
synchronization	The copying of data from the master node to the vice-master node after the vice-master node has been out of service. Synchronization occurs after startup, disk change, failover, or switchover, unless you have delayed the start of synchronization by setting the <i>RNFS_EnableSync</i> parameter to FALSE in the <i>nhfs.conf</i> file. See also replication .
synchronized	A state where the replicated partitions on the disks of the master node and vice-master node contain exactly the same data.

T

terminal server

A console access device that connects the console ports of several nodes to a TCP/IP network.

U

UDP

(User Datagram Protocol)

unsynchronized

After a disk change, cluster startup, failover, or switchover, the master node and vice-master node disks are unsynchronized. That is, the replicated partitions do not contain the same data.

See also [synchronization](#).

V

vertical scalability	<p>The ability to add processors and memory to individual nodes to increase their capability.</p> <p>See also horizontal scalability.</p>
vice-master node	<p>A master-eligible node that has a copy of all the information on the master node. The vice-master node is available to become the master node in the event of a failover or switchover.</p> <p>See also node and master node.</p>
virtual address	<p>The IP address of the CGTP interface.</p> <p>See also virtual physical interface.</p>
virtual disk	<p>One partition of a physical disk that is configured using Solstice DiskSuite™ or Solaris Volume Manager. To an application, a virtual disk is functionally identical to a physical disk.</p>
virtual logical interface	<p>A logical interface associated with a virtual physical interface such as the CGTP interface. A logical interface associated to the CGTP interface can be called <code>cgtp0 : 1</code>.</p> <p>One virtual physical interface can have many virtual logical interfaces.</p> <p>See also virtual physical interface and CGTP interface.</p>
virtual physical interface	<p>The CGTP interface. The CGTP interface of a node can be called <code>cgtp0</code>.</p> <p>See also virtual logical interface.</p>
VLAN	<p>(virtual local area network)</p>

W

Watchdog Timer

A service that monitors the boot process and guards against operating system hang. The Watchdog Timer monitors hardware watchdogs that function at the lights-off management (LOM) level.

