Roaming Client Support

This document covers the following topics:

- About Roaming Client Support
- How Roaming Client Support works
- Implementation tasks

About Roaming Client Support

Roaming Client Support is a service for Norton AntiVirus Corporate Edition clients on a Windows NT-based network. Roaming Client Support lets clients dynamically connect with the parent server that provides the best performance based on speed and proximity.

Roaming Client Support performs the following tasks:

- Automatically roams any client computer to the nearest appropriate parent any time the network address changes.
- Locates the nearest appropriate parent server for any managed client and makes it managed by that parent upon startup on the network.
- Changes to a different parent if the current parent becomes unavailable.
- Periodically rechecks for the nearest server even if the client has not changed location. This adjusts for changes in local servers and server load.
- Attempts to balance the load among a pool of equivalent servers when selecting a parent server.

When to use Roaming Client Support

You can use Roaming Client Support for the following purposes:

- Connect any computer, including a laptop used by a mobile user, to the best parent server. For example, when a mobile user based in New York travels to California, Roaming Client Support detects the new network address and reassigns the user's laptop to the best parent server.
- Locate the best parent server to manage a previously unmanaged computer when it connects to the network. For example, a corporation has a distribution center for new computers. Administrators set up Roaming Client Support on the computers before they are sent out to branch offices. As part of setting up Roaming Client Support, the administrators specify all possible parent servers for the new computers. When end users connect the new computers to the network, Roaming Client Support assigns the best parent server automatically.

Requirements

Roaming clients must be running Norton AntiVirus Corporate Edition under one of the following operating systems:

- Windows 9x
- Windows NT 4.0
- Windows 2000
- Windows XP

Roaming Client Support tools and text files

Roaming Client Support includes the following tools:

Tool name	Description
RoamAdmn.exe	Sets up servers for roam detection. These servers are called roam servers. They act as guideposts in the network tree. You must have local admin rights on the server to run RoamAdmn.exe. Roamadmin.exe is located on Disk 1 in the \ADMTOOLS folder.
NAVRoam.exe	An agent that runs as a service on roam managed clients. NAVRoam.exe checks periodically to determine if a different parent server needs to be assigned to the client. NAVRoam is located in the installation directory on the Norton AntiVirus Corporate Edition clients after installation.

Roaming Client Support uses the following text files:

Text file name	Description
Server list for clients	You create this file for use by NAVRoam.exe on the client. The file lists the first level of servers available as possible roam servers to the client.
Server list for servers	You create this file for use by RoamAdmn.exe on a central server. The file contains a list of servers available as possible roam servers, grouped by hierarchical level.

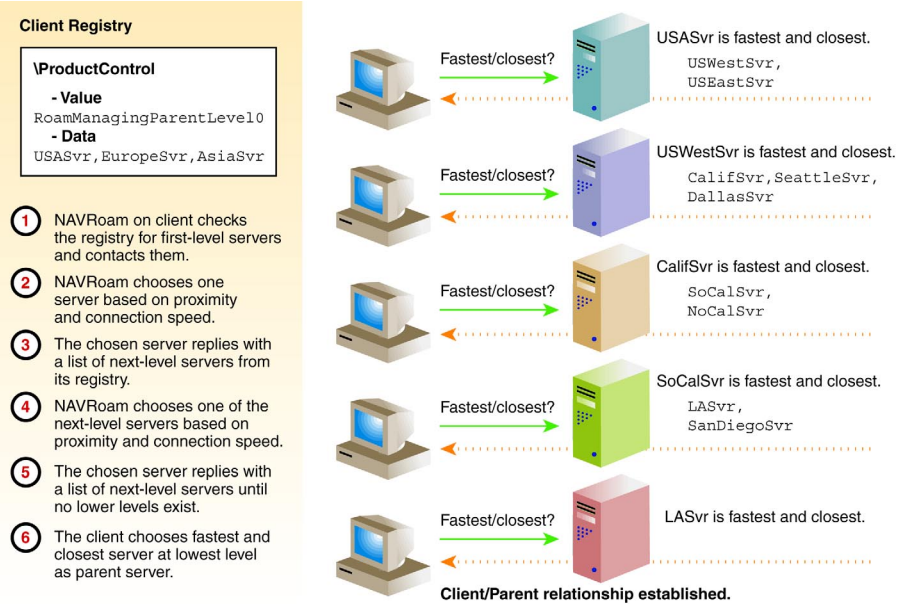
How Roaming Client Support works

Before you implement Roaming client support, create and roll out the server list for clients and the server list for servers. Roaming Client Support then works in the following manner:

- NAVRoam launches on the client computer during startup.
- NAVRoam locates the nearest server based on registry entries and server feedback.
- The chosen server provides the client with a list of servers in the next hierarchical level.

- NAVRoam locates the nearest server at the next level in the hierarchy based on registry entries and server feedback.
- The next chosen server continues to provide the client with a list of servers in the next hierarchical level until no lower level exists.
- The client chooses the optimum server at the lowest level in the hierarchy. Depending on the type of server that is designated by the administrator at the client level, the agent makes one of several decisions after finding the server. For example:
  - If the agent is running on a fully managed client, the optimum server becomes the client new parent server from which a full configuration is immediately pulled.
  - If the client is lightly managed, the server may be used for alerts, quarantine, LiveUpdate .hst files, or a Grc.dat file that provides custom settings.

Figure 1-1 How Roaming Client Support works



Implementation tasks

To implement Roaming Client Support, you must complete the following tasks:

- Analyze and map your Norton AntiVirus Corporate Edition network.
- Identify servers in each region that point roaming clients to the next level of roam servers.
- Create a list of first level servers for roaming clients.
- Run NAVRoam.exe on each roaming client to configure the client to use the list of first level servers.
- Create a second list of all roam servers, layered hierarchically and identified by type (such as quarantine server or Alerts server), if necessary.
- Use RoamAdmn.exe to push the list of all roam servers from the central computer to each of the roam servers.

Figure 1-2 Client implementation tasks

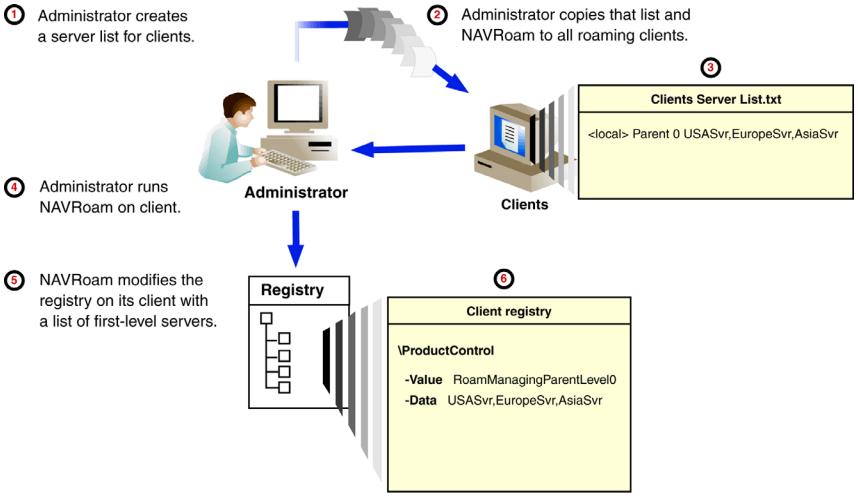
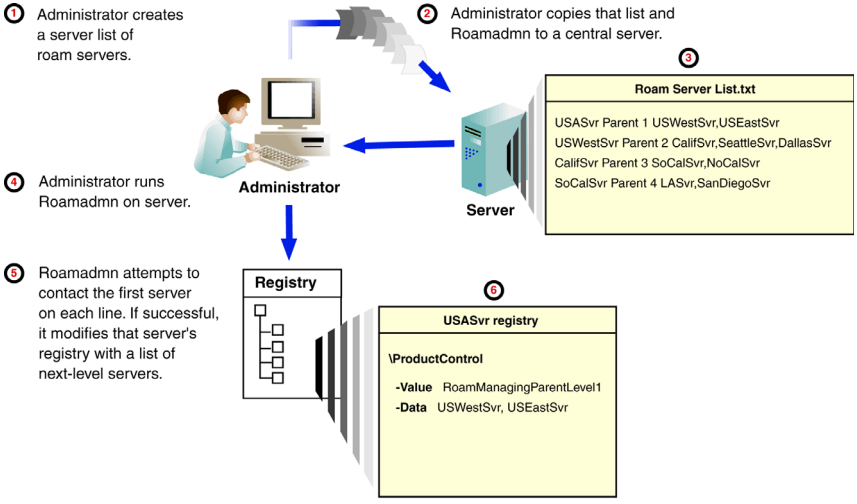


Figure 1-3 Server implementation tasks

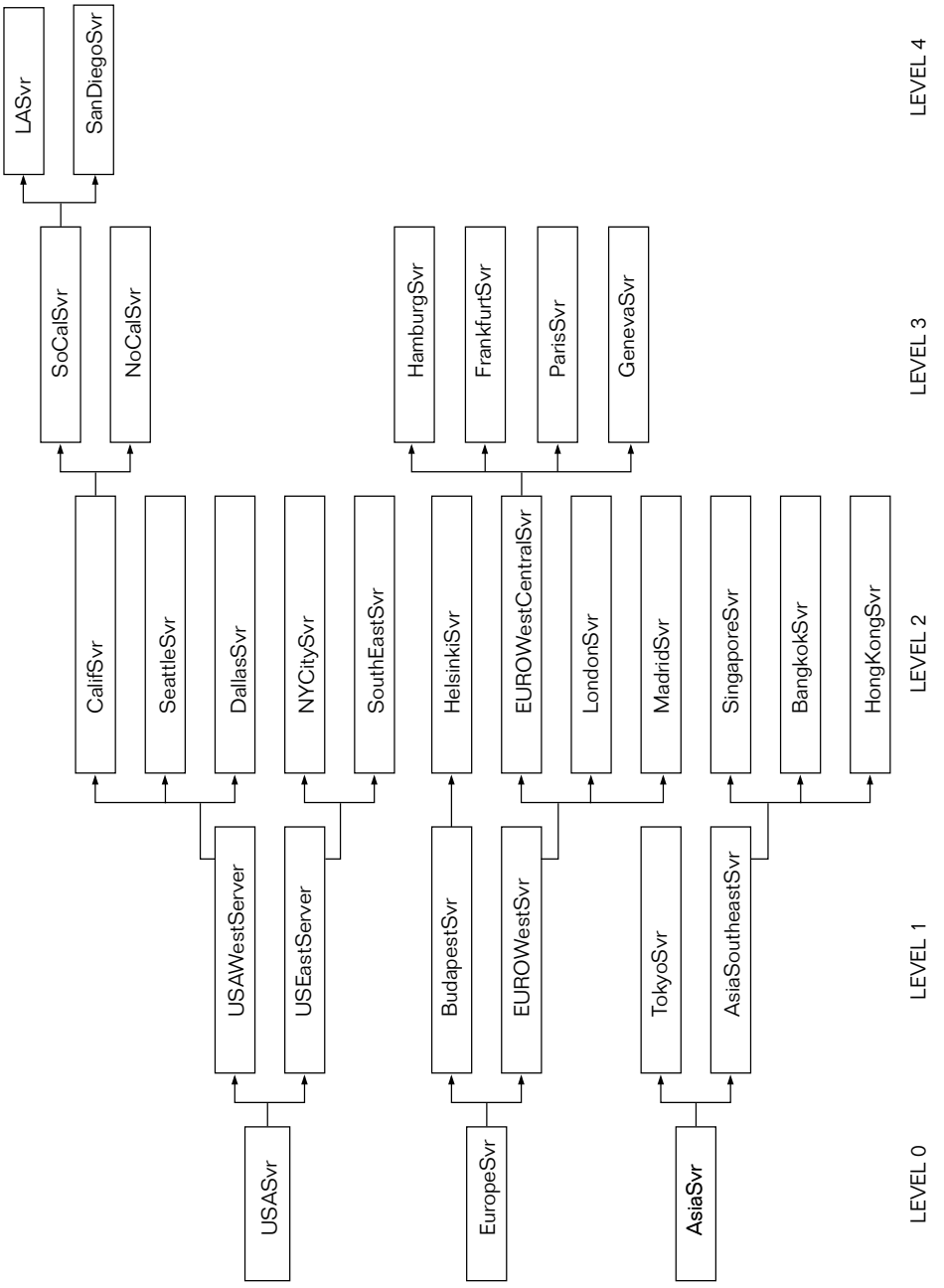


Analyzing and mapping the network

While you may have many servers in your Norton AntiVirus Corporate Edition network, you will probably want to identify only some of them as roam servers. Creating a hierarchical map of your Norton AntiVirus Corporate Edition network lets you quickly identify the necessary roam servers for an enterprise.

The following map offers an example of an enterprise located in three countries. While this organization would have more Norton AntiVirus Corporate Edition servers than appear below, only the mapped servers have been identified as regional pointer servers.

Figure 1-4 Example enterprise map



Identifying servers for each hierarchical level

To identify servers for each hierarchical level, you must analyze your mobile users. For example, you may need to identify mobile users based on whether they travel internationally, throughout the country, or within a smaller geographic area.

If the users travel internationally, their server list will contain the names of the country servers at level 0. If they travel throughout the country only, their server list will contain servers from level 1.

Depending on enterprise network speeds, the server list could contain only the top level of servers (level 0 in the example enterprise map). This simplifies building the client server list.

The only limit to the number of levels that you can define is determined by the text file size limit of 512 characters.

Creating a list of first-level servers

You can create the clients' server list text file using a text editor such as Notepad. The server list text file must contain lines in the following format:

<local><type of server><level><server list>

where:

<local> indicates to the client that this is the first level of servers that NAVRoam on the client should attempt to contact when searching for a roam server;

<type of server> is the server type (primary server, parent server, Quarantine server, Grc.dat server, or Alert server);

<level> is 0;

<server list> is the list of servers, separated by commas (spaces between the commas are optional).

For example, the clients' server list text file corresponding to the example enterprise map is as follows:

<local> Parent 0 USASvr,EuropeSvr,AsiaSvr

Note: This is the only line in the server list for the roaming clients in this example. The list tells the clients to contact and compare returns from these three servers only. Depending on which server offers the best return, the client continues its search down the map into one of the three continents.

Configuring clients to use the list of first-level servers

You must roll out NAVRoam.exe and the server list to each client that is a roaming client.

Once these files have been rolled out to the clients, NAVRoam must be run on the client computers to import the server list file into the clients' registry.

By default, NAVRoam.exe is rolled out to the clients' installation directory during the Norton AntiVirus Corporate Edition installation process. You must also roll out the server list file to the clients into the same folder. The easiest way to roll out the server list file during installation is to use a ToNAV folder. By creating a folder called ToNAV in the installation source files directory and putting the server list file into it, the installation process automatically rolls out the contents of the ToNAV folder to the installation folder.

NAVRoam must be run as a command line utility to import the server list into the clients' registry.

To import the server list into a client's registry

- From a command prompt, at the folder containing NAVRoam.exe and the server list file, type:

  NAVRoam /import ServerListFile.txt

  where:

  ServerListFile.txt is the text file containing the following line:

  <local><type of server><level><server list>

For the example enterprise map, importing the server list creates a value under the

HKEY_LOCAL_MACHINE\SOFTWARE\INTEL\LANDesk\VirusProtect6\CurrentVersion\ProductControl registry key as follows:

Registry Value Name: RoamManagingParentLevel0

Data: USASvr,EuropeSvr,AsiaSvr

Note: This same registry value is created on each client computer on which NAVRoam runs.

Running NAVRoam

You must manually install the NAVRoam agent on each client designated as a roaming client. You can run NAVRoam as any of the following:

- Command line utility
- Service started automatically

Automatic startup is recommended for NAVRoam.exe.

To run the NAVRoam agent as a command line utility

1. At the command prompt, type the following command:
   NAVRoam
2. After the NAVRoam command, type any necessary command line options.
   For example, you may want to use the /export, /import, or /nearest_parent option.
   See "Command line options" on page 21.
3. Press **Enter**.
   NAVRoam launches, performs the option, and then closes.

Note: While running the agent as a command line utility is useful for importing the list of first level servers, or performing a one-time operation, the client will not roam every time it starts up.

To start NAVRoam as a service loaded automatically

1. Type the following at the Start/Run line:
   NAVRoam /install
2. Restart the computer.

NAVRoam runs as a service to continually check and perform the following tasks:

- Check that any parent that the client has been attached to is still valid. If the parent server is no longer valid, it connects with the closest available parent on the network.
- Check to see if the client's network address has changed. If the address has changed, it connects with the closest available parent.
- Check the parent server's ClientCount registry key to see if the number of clients has changed. If the number of clients has changed, the new client count is recorded for use in load balancing calculations.

The service starts automatically when the computer is turned on. It runs until the computer shuts down. If the user logs on and off, the service continues to run in the background.

When NAVRoam is run with the /install option, NAVRoam.exe is loaded into the registry as a service.

- On Windows NT/2000/XP, it is added to the Service Control Applet using the following registry entry:
  HKLM/System/CurrentControlSet/Services/ NAVRoam
- On Windows 9x/Me, NAVRoam loads from the following registry key entry:
  HKLM/Software/MicroSoft/Windows/CurrentVersion/RunServices

Creating a second list of all identified roam servers

Once you create your network map, you can follow the layers of the map to create the lines of text. You create the server text file with an editor such as Notepad. It must contain lines in the following format:

<computer><type of server><level><server list>

where:

<computer> is the hostname of the server;

<type of server> is the server type, such as primary server, parent server, Quarantine server, Grc.dat server or Alert server;

<level> is the level as specified in the server list text file;

<server list> is the list of servers, separated by commas. (Spaces between the commas are optional.)

For example, following the example enterprise map from the USA branch into Southern California results in the following server list:

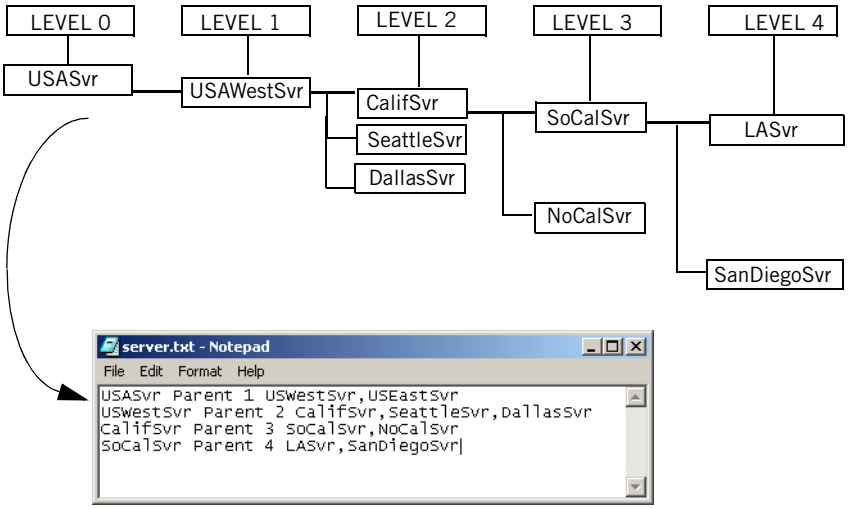
USAServer Parent 1 USWestServer,USEastServer

USWestSvr Parent 2 CalifSvr,SeattleSvr,DallasSvr

CalifSvr Parent 3 SoCalSvr,NoCalSvr

SoCalSvr Parent 4 LASvr,SanDiegoSvr

Figure 1-5 Map compared to server text file



Pushing the list of roam servers

After the server list of roam servers has been created, use RoamAdmn.exe to push it out to all of the roam servers.

RoamAdmn.exe is located on Disk 1 in the AdmTools folder. You must copy it to the computer from which you want to work while pushing the list to all of the servers.

To set up the roaming servers

- At the command prompt, type the following:
  RoamAdmn /import serverlist.txt
  where Serverlist.txt represents the name of the server list you created.

When RoamAdmn.exe is run at the working computer, it parses the server list file line by line. It attempts to contact the server named at the beginning of each line. If it can communicate with the server, it adds that one line into the registry of that server.

When Roamadmn has finished processing each server, each server contains a list of the servers on the next level down on its branch. If the server cannot be reached, that server is skipped.

Note: Even though Roamadmn is pushing to several servers, it parses only one list, pushing only the line identified by each server's name to that one server's registry. NAVRoam uses the Norton AntiVirus Corporate Edition communication protocols and remote registry calls to accomplish this task.

Example

A corporation has a computer from which all of the North American roaming servers are visible. The Serverlist.txt file includes the following lines:

USASvr Parent 1 USWestServer,USEastServer

USWestServer Parent 2 CalifSvr,SeattleSvr,DallasSvr

USEastServer Parent 2 NYCitySvr,SouthEastSvr

CalifSvr Parent 3 SoCalSvr,NoCalSvr

SouthEastSvr Parent 3 MiamiSvr,AtlantaSvr,RichmondSvr

SoCalSvr Parent 4 LASvr,SanDiegoSvr

When imported to the registry, the data appears as follows:

Server Name	Registry Value name	Data
USASvr	RoamManagingParentLevel1	USWestServer,USEastServer
USWestServer	RoamManagingParentLevel2	CalifSvr,SeattleSvr,DallasSvr
USEastServer	RoamManagingParentLevel2	NYCitySvr,SouthEastSvr
CalifSvr	RoamManagingParentLevel3	SoCalSvr,NoCalSvr
SouthEastSvr	RoamManagingParentLevel3	MiamiSvr,AtlantaSvr,RichmondSvr
SoCalSvr	RoamManagingParentLevel4	LASvr,SanDiegoSvr

When NAVRoam communicates

When NAVRoam is installed as a service, it launches at the following times:

- When Windows starts and loads its services.
- When the computer's network address changes.
- When a parent server becomes unavailable. By default, this check runs every two hours.

When NAVRoam launches, the following occurs:

- The NAVRoam agent locates the best server as determined by connection speed between client and server, and proximity.
- The NAVRoam agent contacts the list of servers it was given by the administrator. From the example enterprise map, this would be the list in the registry key \ProductControl:

  Value: RoamManagingParentLevel0

  Data: USASvr,EuropeSvr,AsiaSvr
- The agent requests the next level of servers from the best server found.
- This continues until the fastest responding server does not have a lower level.
- The parent server is assigned.

The NAVRoam agent runs the following series of checks regularly:

- Checks the computer's Client registry key to determine if the computer is a parent. If so, it determines if the number of clients has changed.
- Checks that any parent to which the client has been attached is still valid. If not, it connects the computer with the closest available parent on the network (as though the agent had just launched). NAVRoam requests information from:

  HKEY_LOCAL_MACHINE\SOFTWARE\Intel\LANDesk\VirusProtect6\CurrentVersion\

  ProductControl\RoamManagingParentLevel0
- Checks if the computer's network address has changed. If so, it reconnects with the closest available parent.
- If the client was previously assigned to a different parent, it attempts to delete itself from the old parent after it checks in with the new parent (it deletes its value from the Clients key).

Specifying load balancing servers

When you create the server list text file for servers, you can allow for load balancing by instructing servers to be treated as equals regardless of how long it takes to contact them. This is useful when you have multiple servers in the same building and you want to spread the clients in the building between them.

To set load balancing in the server list text file, use an equals sign (=) between the servers in the list instead of commas. For example:

SouthEastSvr Parent 4 MiamiSvr=AtlantaSvr=RichmondSvr

Note: You must run the NAVRoam agent with the /install option on each server specified as a load balancing server. The registry key \ProductControl\RoamClient should be set to 0 (zero) automatically, which prevents the server from inadvertently trying to roam to other servers.

If the fastest response is from a server surrounded by =, then each server in the list will be contacted. If those servers are running the agent then they have a registry key, ClientCount, that counts the number of clients in ProductControl. The agent reads this key, and selects the server from the = list that has the smallest number of clients. This becomes the new parent server.

If some of the load balancing servers are not running the agent, the client count will not be available, and the agent will select another load balancing server at random. This spreads the clients among the servers, although not as equally as when the ClientCount registry key is available.

Note: Load balancing has a higher priority than finding the closest parent.

Specifying backup servers

You can specify a list of backup servers.

To specify a list of backup servers

- Separate the servers by the greater than symbol (>).
  For example:
  SouthEastSvr Parent 4 MiamiSvr>AtlantaSvr>RichmondSvr

The response time is checked only for the first server in the list that answers. Subsequent servers are used if the preceding servers in the list do not respond.

There is no load balancing. If the first server goes down, the clients will migrate to the next server on the list when they check for their parent.

Backup servers do not need to be running the NAVRoam agent.

Specifying alternate server types

Roaming Client Support can connect a roaming computer to more than one type of parent.

On startup and whenever the network address changes, the computer can be paired with the nearest type of parent server for:

- Norton AntiVirus Corporate Edition (normal parent server)
- Quarantine Server
- Alerts (AMS^2)
- Grc.dat (specifies a server to provide the client with Grc.dat settings)
- Primary server

Note: A Quarantine server must have the Norton AntiVirus Corporate Edition server program installed in order for Roaming Client Support to find it. A Quarantine server on which Norton AntiVirus Corporate Edition for desktops is installed will not be found.

The following steps must be taken to configure clients to roam to other types of servers.

- Change the client registry to roam to other types of servers.
- Change the server list file being pushed to the servers.
- Tell the roaming clients to find the nearest alternate server.

Most of these steps are manual changes to the server list files and to the client registry.

Changing the client registry to roam to other types of servers

Set the client's registry values that correspond to the server type to 1. There is a client registry value for each type of alternate server. For example, to configure a client to roam to a quarantine server, create a registry value under \ProductControl of RoamQuarantine, and set it to 1.

See "Related Registry keys" on page 19.

Changing the server list file being pushed to the servers

To change the server list file being pushed to the servers, you must do the following:

- Specify the alternate server types in the server list text file.
- Push the list to the registry of the specified servers using the Roamadmn tool.

Based on the example enterprise map, the following lines are all valid (although not all used together).

CalifSvr Parent 3 SoCalSvr,NoCalSvr

CalifSvr Quarantine 3 SoCalSvr,NoCalSvr

CalifSvr GRC 3 SoCalSvr,NoCalSvr

CalifSvr Alerts 3 SoCalSvr,NoCalSvr

CalifSvr Primary 3 SoCalSvr,NoCalSvr

Registry values on the server are named appropriately. For example, for a Level 3 list:

- The value for Quarantine servers is RoamManagingQuarantineLevel3.
- The value for Alert servers is RoamManagingAlertsLevel3.
- The value for Grc.dat servers is RoamManagingGRCLevel3.
- The value for the nearest primary server is RoamManagingPrimaryLevel3.

Instructing the roaming clients to find the nearest alternate server

You must instruct the client to find the nearest alternate roam server.

To instruct roaming clients to find the nearest alternate server

- At the command line prompt, type any of the following:
  NAVRoam /nearest_parent
  NAVRoam /nearest_quarantine
  NAVRoam /nearest_GRC
  NAVRoam /nearest_alerts
  NAVRoam /nearest_primary

The primary difference between /nearest_parent and /nearest_GRC occurs when the Grc.dat file is processed. Using /nearest_parent makes the roaming client find the nearest parent. Policy settings are not processed until the client actually checks in with the parent. Using /nearest_GRC makes the roaming client get the policy settings from the parent immediately, and the settings are processed immediately.

Note: A client cannot connect with multiple parents of the same type.

Related Registry keys

You can edit the registry to change Roaming Client Support registry values using a registry editor such as Regedit or Regedt32.

The agent behavior is controlled by registry keys under:

HKEY_LOCAL_MACHINE\SOFTWARE\INTEL\LANDesk\VirusProtect6\CurrentVersion\ProductControl

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Note: NAVRoam registry keys are not case-sensitive.

The keys are as follows:

Key name	Description
CheckForNewParentIntervalInSeconds	If a computer cannot find the nearest parent when it first starts, it periodically checks to see if the network is up. The interval is set by this registry key. The default value is 30 seconds.
CheckParentIntervalInMinutes	Determines how often the computer checks to see if its parent is available. If the parent is not available, it tries to find a new parent. The default value is 120 minutes.
RoamClient	Instructs the agent to make this computer a child of the nearest parent. The default value is 1. Set this value to 0 if you do not want the computer to become a child of the nearest parent.
RoamQuarantine	If the value is set to 1, Quarantine forwarding is set to the nearest server found from the Quarantine search keys. The default value is 0.
RoamAlerts	If the value is set to 1, AMS^2 alert forwarding is set to the nearest server found from the Alerts search keys. The default value is 0.
RoamGRC	If the value is set to 1, the client roams to the server from which it should receive policy file (Grc.dat) updates. The default value is 0.
RoamServer	If the value is set to 1, the client roams to the best primary server. The default value is 0.

Key name	Description
ParentGRCPath	Set the ParentGRCPath value to GRC.dat. The agent copies Grc.dat to the local computer and applies it. See information for RoamGRC above. If both the RoamClient and RoamGRC keys are set to 1, NAVRoam copies the Grc.dat from the parent. NAVRoam then copies the Grc.dat from the GRC parent and overwrites the copy that came from the parent.
ParentLiveUpdateHstPath	Defines the directory underneath the NAV home directory; for example, \Myliveupdatehost\Liveupdt.hst (Do not specify the full path.) The agent copies the LiveUpdate host file here.

Note: The .hst files must be placed under the NAV or NAVNT folder. If you are using the LiveUpdate Administration Utility, you must copy the .hst files from the the LiveUpdate Administration Utility folder to the NAV or NAVNT folder.

Running Roaming client support as a command line utility

The agent can be run as a service or as a command line utility. Running Roaming Client Support as a service rather than a command line utility offers the following advantages:

- Provides more control over schedule runs
- Allows for continued monitoring

To run Roaming Client Support as a command line utility

1. At the command line prompt, type:
   NAVRoam
2. After the NAVRoam command, type any necessary command line options.
3. Press **Enter**.

Command line options

You can use the following command line options with NAVRoam and Roamadmn.

Option	Description
/h	Displays a list of the options with descriptions of their usages.
/import <server list>	<server list> is the text file in which the list of potential parent servers is specified. Sets up client or server registry keys. When using RoamAdmn.exe, you can import the server list to remote servers. When using NAVRoam.exe, you can import the server list to the registry of the local computer.
/export <file>	<file> is the name of the file to which the information is written. Reports all the roaming servers that the client can find at all levels and for all parent types (primary server, parent server, Quarantine server, alert server, and Grc.dat server). You can use the file created with the export command as the server list for import.
/install <path> <new service name> <new exe name>	<path> is the path for the folder to which you want to copy NAVRoam. <new service name> is NAVRoam. <new exe name> is NAVRoam.exe. Registers Roaming Client Support as a service, then starts it. The service runs until the computer is turned off.
/remove <new service name>	Stops and removes NAVRoam.exe.
/nearest	Finds and sets nearest appropriate parent (for the primary, parent, Quarantine, alert, or Grc.dat server). Requires that the parent GRC path be set manually in the registry.
/nearest_parent	Finds and sets the nearest client parent server.

Option	Description
/nearest_primary	Finds and sets the nearest primary server for clients running NAVRoam. Requires that the parent GRC path be set manually in the registry.
/nearest_quarantine	Finds and sets the nearest Quarantine parent server.
/nearest_GRC	Finds and applies the Grc.dat file from the nearest Grc.dat parent server. Requires that the parent GRC path be set manually in the registry.
/nearest_alerts	Finds and sets the nearest Alert (AMS^2) server.
/check_parent	Verifies that the parent server is running.
/shutdown	Disconnects the client from the parent server.
/time-network <elapsed-time-in-seconds> <delta-time-in-milliseconds> <servers>	Provides the average amount of time that it takes to contact each specified server. <elapsed-time-in-seconds>: Specify the number of seconds to allow the process to run. <delta-time-in-milliseconds>: Specify in milliseconds how often to contact the server. For example, 10000 contacts the server every 10 seconds. <servers>: Specify the servers to be contacted. Separate server names with commas. Do not include spaces between server names or commas.

Note: You must have Admin rights to use command line options.