

Version 1.0.0



# Altiris Deployment Server 5.5 Port Requirements

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## Technical White Paper

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### CONTENTS

Altiris Deployment Server Ports .....	1
Technical White Paper .....	1
Copyrights & Trademarks .....	1
CONTENTS .....	1
<b>1      Configuring Ports, Multicast and IP Addresses for use by Deployment Server2</b>	
1.i    Routers .....	2
1.ii   RapiDeploy.....	4
1.iii   Deployment Server/aclient Connectivity .....	5
1.iv    Setting a Static Port for File Transfers .....	8



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# 1 Configuring Ports, Multicast and IP Addresses for use by Deployment Server

## 1.i Routers

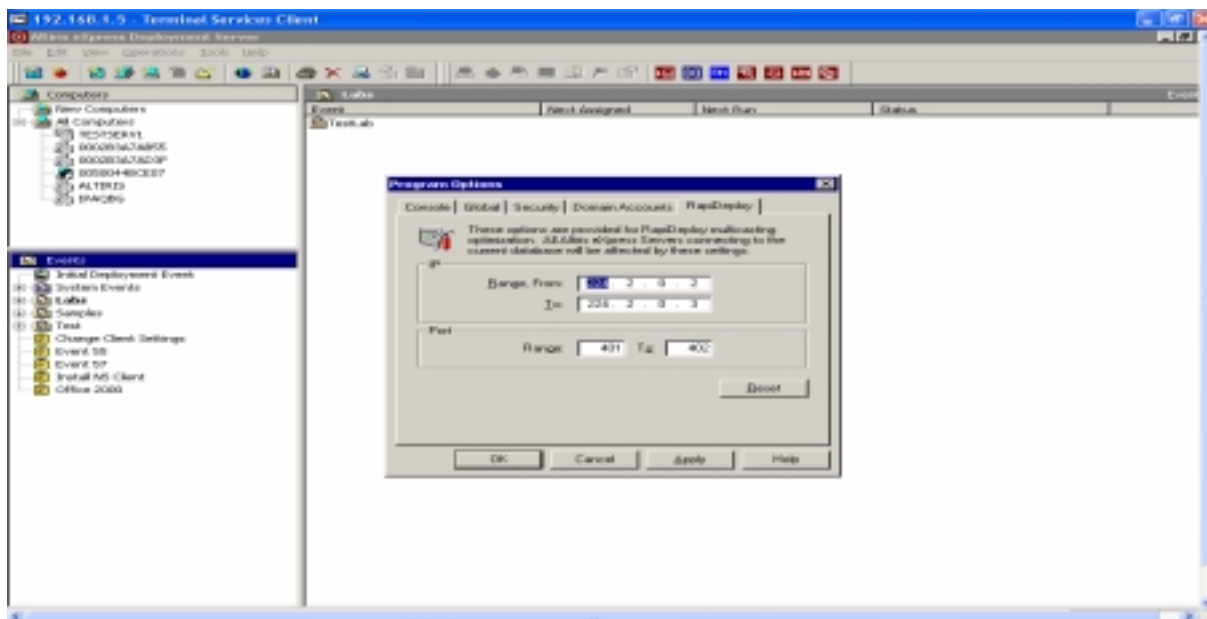
- a) Various ports and multicast ranges need to be enabled to allow Deployment Server to work with routers. A summary of these and a brief explanation is provided below:
- b) Ports 1 – 1024 are statically assigned ports for known protocols. We use 401 and 402 for no other reason than they are unassigned. Ports above 1024 are assigned dynamically and the TCP/IP stack will chose any available port.
- c) AClient and BootWorks use a static port (402) to locate the server. Once communications has been established, the server and the clients will use a dynamic port to do the file transfers (similar to FTP). You will need to configure your routers much like you would for FTP -- you allow TCP connections through as the primary port number 402 and then allow secondary connections on all other dynamic ports (above 1024).
- d) Routers should be enabled for multicast for the complete 224.x.x.x and 225.x.x.x range.
- e) Intel docs state the following ports are required for PXE.
  - DHCP - Ports 67 & 68
  - MTFTP - Port 69
  - Extended DHCP PXE request - Port 4011
- f) BOOTP and DHCP servers use UDP port 67 to listen for and receive client request messages. BOOTP and DHCP clients typically reserve UDP port 68 for accepting message replies from either a BOOTP server or DHCP server.
- g) In practice Altiris requires ports 67; 68; 69; 401; 402; 4011 as well as the entire IP scope 224.x.x.x to be opened up for both multicast, UDP and TCP traffic. IP forwarding must be turned on and multicast enabled on all switches and routers for this to work. Port 67 should also be opened up for PXE. It is possible there may still be failures due to time outs due to NICs failing. Unless a NIC follows the PXE spec which is 3 seconds for the response to get back to the server, any hops may cause the process to fail.
- h) It is also prudent to add an IP-helper address to your switch configuration. When you have added the addresses for the DHCP Server and the PXE Server, PXE packages are **usually** routed without any issues over multiple VLANs.
- i) Altiris requires additional Port and IP address ranges besides those used just for PXE and which should not be overlooked when considering the requirements for routers. Examples of these additional requirements include:

- i) Connection of the acient for managed computers and which can be configured to use either multicast or IP or Ports, depending on the network environment.
- ii) RapidInstall for the deployment of RIP's and MSI's. This is a bit more complex as RapidInstall uses the complete range of 224.x.x.x and 225.x.x.x and the ports are allocated dynamically.
- j) The ports and IP address/multicast ranges used by **RapiDeploy** and **acient** can all be configured and a summary of the interfaces used for this is provided below. You can only configure the port for **RapidInstall** and the method for doing this is also described. Setting the port for files transfers to static is equally applicable to images and RIPs/MSIs.
- k) The port used by Deployment Server for remote control is allocated dynamically in the range above 1024.
- l) The port used for sending a Wake on LAN signal is also allocated dynamically in the range above 1024.
- m) Additional Considerations
  - i) PXE won't work with a DHCP relay or DHCP gateway (like Cisco's DHCP relay). The reason for this is that the Relay makes the request for the IP address which means it provides the wrong MAC address. The machines will PXE boot but will not be able to automatically detect if there is work for that pc, instead it will default to the Initial Deployment event boot.
  - ii) With Cisco switches some times there can be problems with PXE timing out while trying to negotiate a port speed. If you have a Cisco switch and you have locked the port speed and duplex on the switch, the Intel Boot agent on the client PC will still try and negotiate the port speed and will time out because the switch will not let any traffic go through the port until the negotiation is finished. The work around for this is to use the PortFast command on the Cisco switches which allows you to enable traffic to go through the port before negotiation is finished.
  - iii) It may be prudent to configure the routers with statements to forward DHCP discovers to both the DHCP and the Altiris PXE servers.
  - iiii) If using Gigabit 1000Mb NIC's (includes 10/100/1000 series) on the Deployment Server, you will need to configure the "Offload Transmit TCP Checksum" to "Off". The TCP Checksum offloads are part of the NDIS 5 specifications (if the Deployment Server NIC is not using the NDIS 5 driver then this option will not be available). There are known issues with the NDIS 5 driver when connecting to a client running in DOS. Connections in this instance fail when the card is installed on the Deployment Server due to a difference in packet size and which will not work correctly with DOS Clients. In the reverse direction, this is not an issue where these NIC's are used with the client as they still load the DOS driver when booting to PXE or BootWorks.

The following sections summarise those ports which can be configured and the process to do this



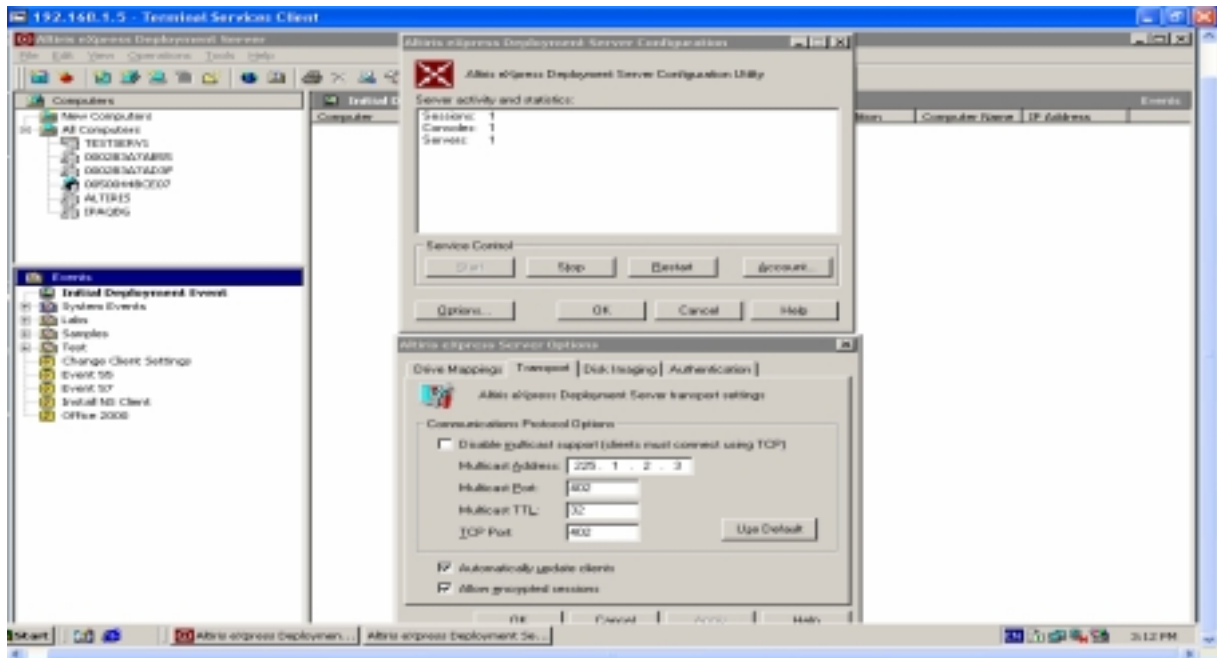
## 1.ii RapiDeploy



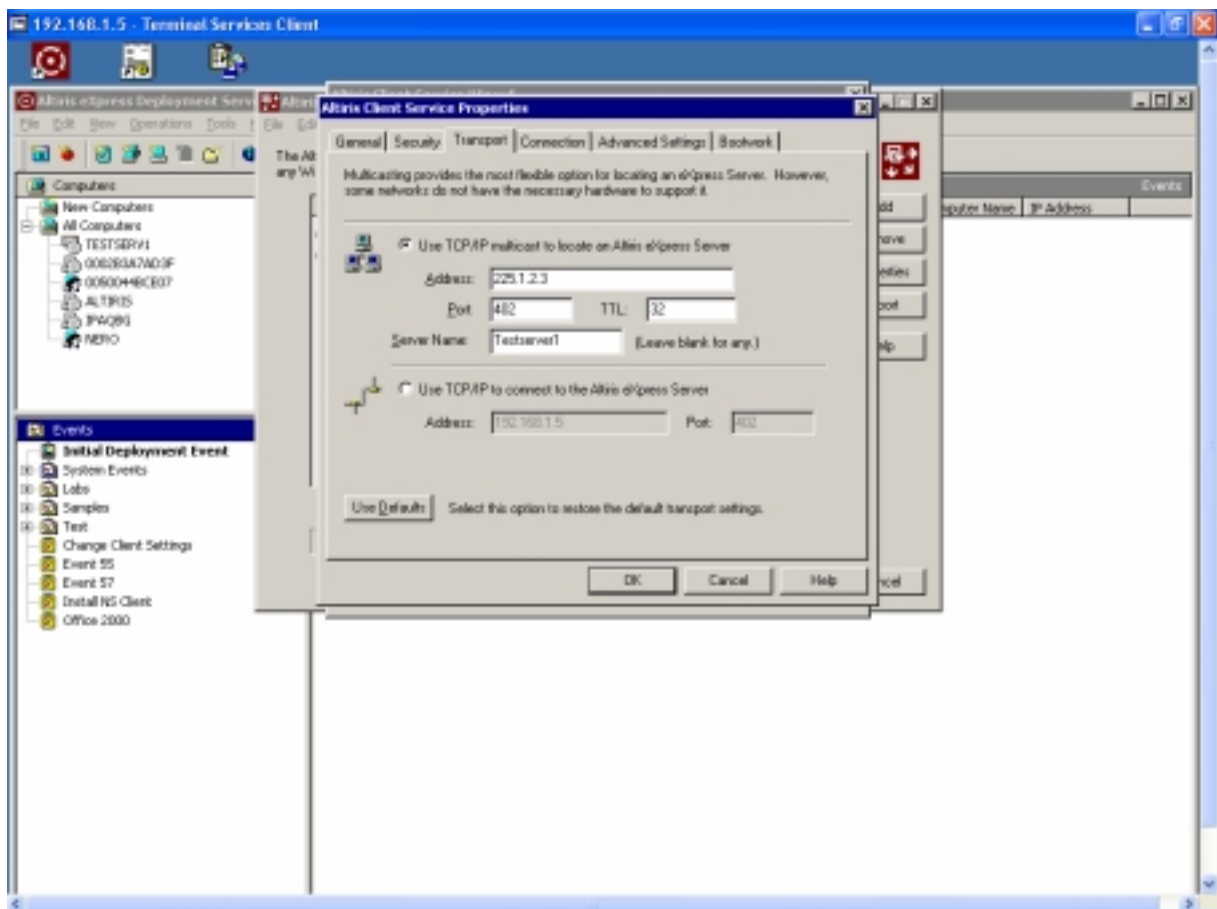
- a) Multicast is configured for RapiDeploy from within the Deployment Server Console. Go to View>Options and select the RapiDeploy tab.
- b) The Default IP Range is 224.2.0.2 – 224.2.0.3.
- c) The default Port Range is 401 – 402.
- d) This feature optimizes the multicasting ability of the RapiDeploy application in Deployment Server. Multicasting allows you to deploy images to a group of computers simultaneously, downloading an image from a file server (or accessing a local hard drive) and managing the imaging of several client computers concurrently. Because RapiDeploy is more efficient when writing directly to the IP address of the NIC driver, you can enter a range of IP addresses when using the multicasting feature to speed computer deployment and management. Deployment Server accesses the range of computers using the defined IP pairs and avoids retrieving the computers through the port and OS layers. However, because some NIC cards do not handle multiple multicast addresses, you can also identify a range of ports to identify these computers. On the first pass Deployment Server accesses the selected computers using the list of IP numbers. On the second pass Deployment Server accesses the selected computers using the port numbers or higher level OS ID's.

## 1.iii Deployment Server/aciient Connectivity

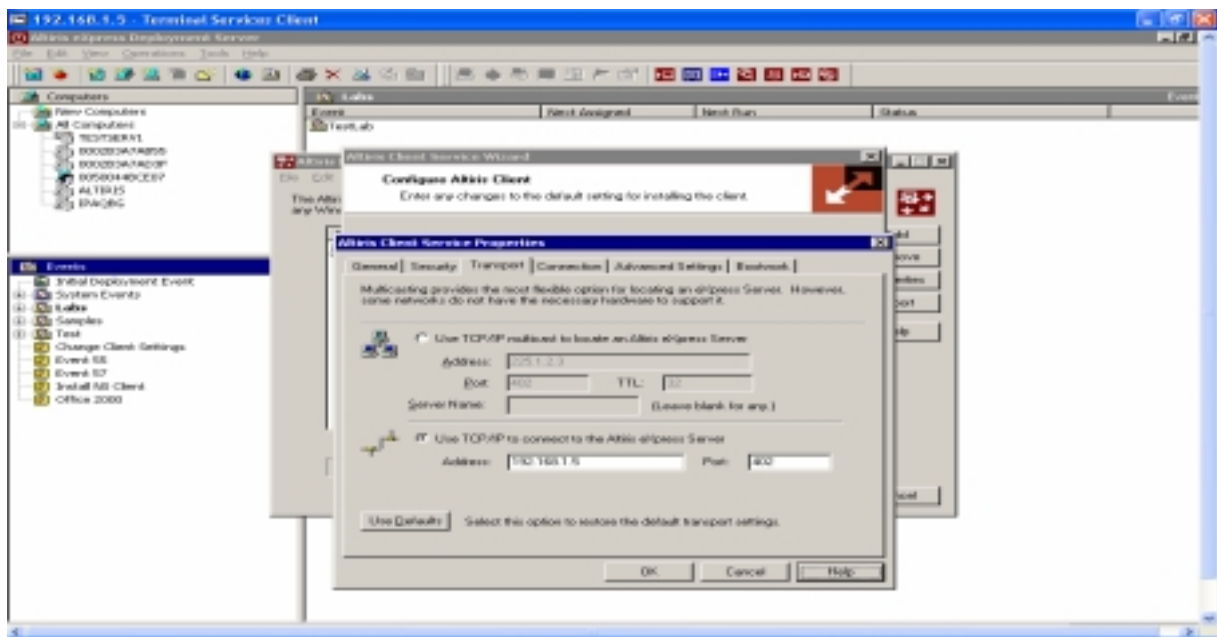
- a) If you change these settings then you will also need to configure the Deployment Server Configuration Settings for each Deployment Server which is connecting to that database. If you have other Deployment Servers connected to other Databases then these changes will not affect them – unless of course you make the same (or other) changes to those Deployment Servers as well.



- e) You can access the Deployment Server Configuration Settings from the **Control Panel** and then selecting the **Altiris eXpress Server** icon.
- f) Your managed computers **aciient** service can locate and connect to a Deployment Server using multicasting or by connecting to the server's IP address.
- g) You have the option to:
- i) Modify the multicast settings such as :
    - (1) Multicast Address
    - (2) Multicast Port
    - (3) Multicast TTL
    - (4) TCP Port
  - ii) Disable Multicasting and the aciient must then connect to the Deployment Server using TCP.

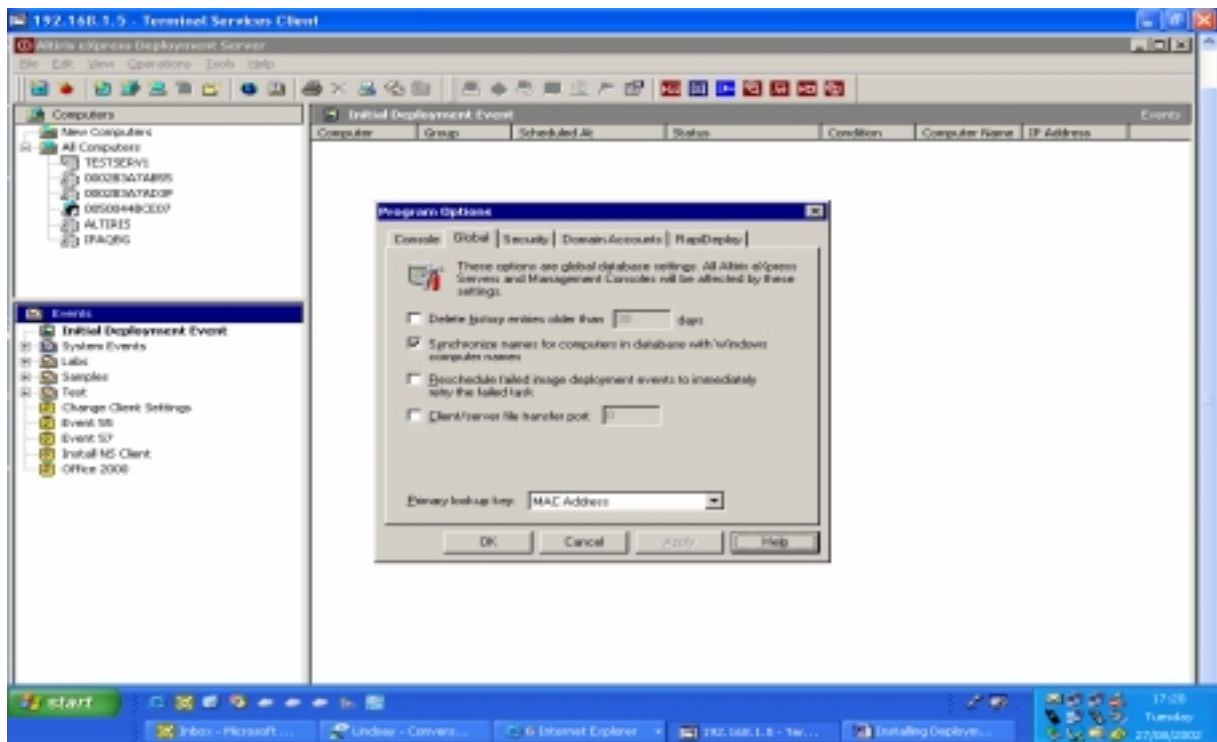


- h) If you change the settings at A.3.1.ii above then you **MUST** configure the acient accordingly. You configure the acient properties via the **Altiris Client Services Properties**. You can change this at the local machine by double clicking the **acient** icon in the systray (password may be required if you have secured the acient). Alternatively **right click** the machine within the **Deployment Server Console** and select **acient properties** to manage the acient remotely. For new machines go to **Tools>Remote Client Installer** then select the **add** button to add the machines you wish to install the acient too and then highlight a machine and selecting properties.
- i) Managed computers can use the multicast address **if** they are on the same segment as the Deployment Server **and** they are not using default PXE boot files.
- j) Use the default multicast IP address and port number if possible to avoid client connection problems.
- k) The TTL field specifies the number of “hops” or hubs that the client can go through to multicast.
- l) Managed computers should use the Deployment Server IP address if they are not on the same segment as the server, or if they are using default PXE boot files to boot the client computers. Use the default port number if possible to avoid client connection problems.



- m) If you are using TCP to connect the acient to the Deployment Server you must set it to use the same IP address as the Deployment Servers NIC IP address for the VLAN segment you are working in. So for instance if NIC card (1) is using the address 192.168.0.1 and NIC card (2) is using 11.11.11.1 and you are configuring the acient for workstations installed to the network on the second VLAN then you must set the IP address under **Transport Settings** in the acient properties to 11.11.11.1. If you are configuring the acient for the workstations installed to the first VLAN then the IP address must be set to 192.168.0.1.

## 1.iv Setting a Static Port for File Transfers



- a) Select this option to specify a static TCP port for file transfers to the clients. The default value is 0 and will cause the server to use a dynamic port. This setting is useful if you have a firewall and need to use a specific port rather than a dynamic port.

End