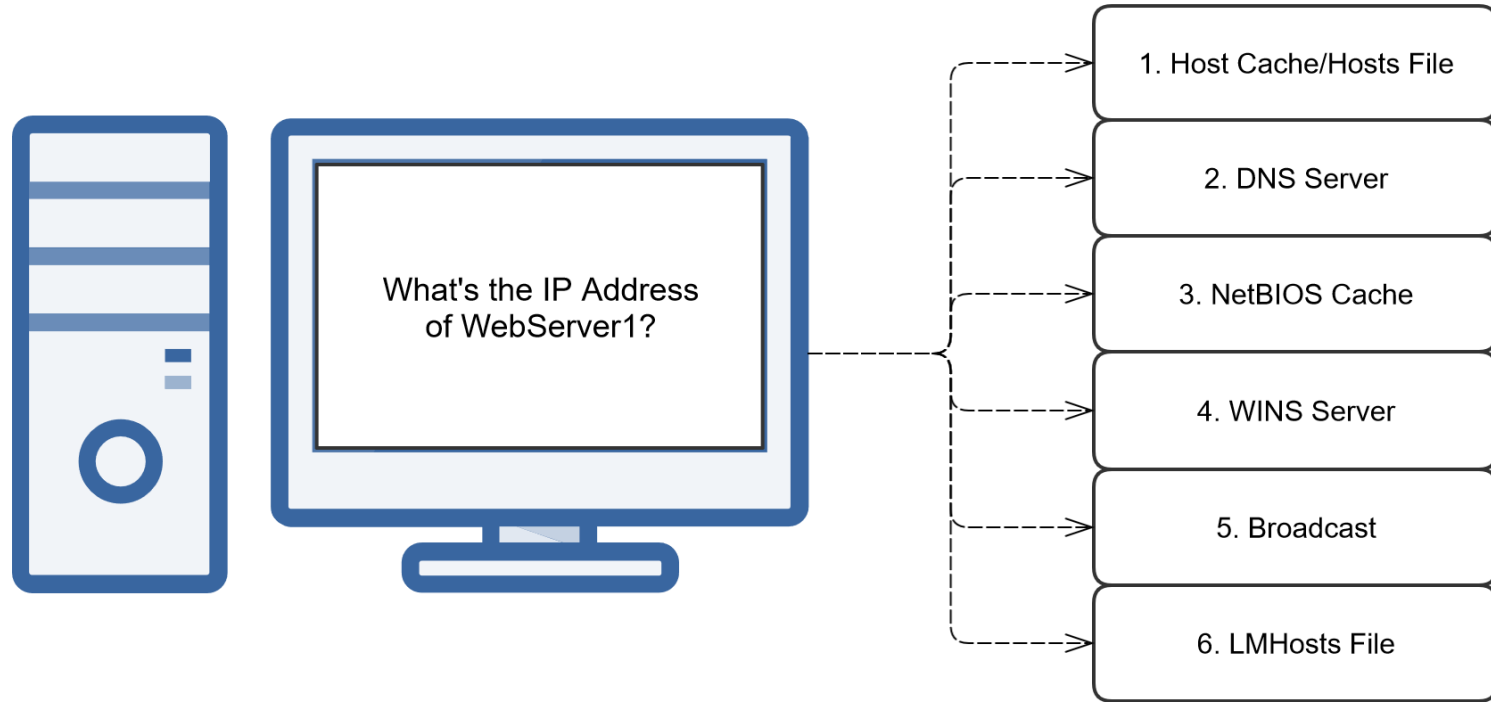
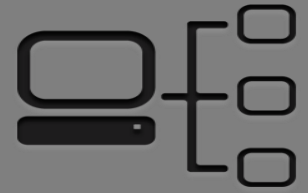
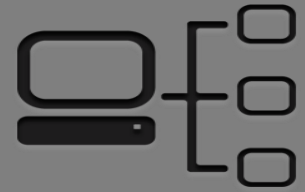


The Name Resolution Process



Understanding NetBIOS & Host Names



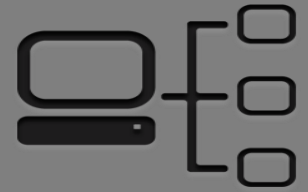
NetBIOS Names

- Network Basic Input/Output System (NetBIOS)
- 16 characters in length with 15 characters used for the name and the 16th represents the NetBIOS service.
- For Example:
 - WebServer1 <20>
 - PrimaryFileServ<20>
- Used in conjunction with a WINS server and LMHosts file.
- Not used as part of an Active Directory Domain.

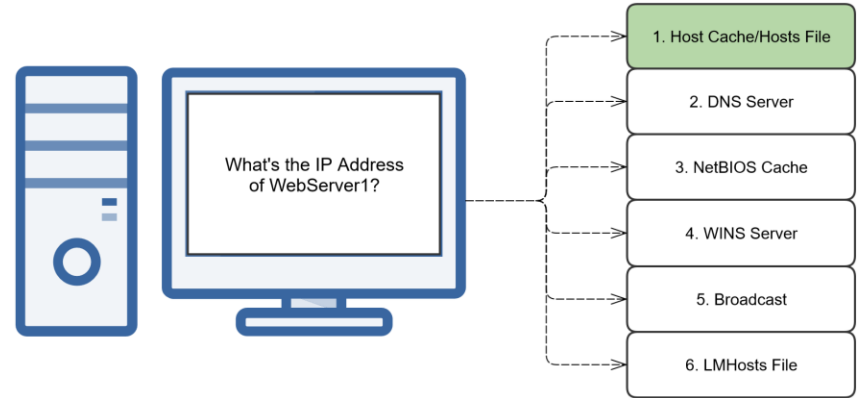
Host Names

- A fully qualified domain name (FQDN).
- Can be up to 255 characters in length and part of an Active Directory Domain.
- For example:
 - WebServer1.Alnet.Internal
 - DNS.Alnet.com
- The primary type of name used on networks today.

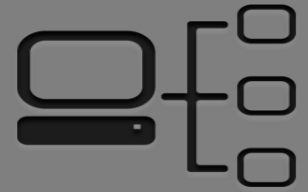
Step 1: Host Cache/Hosts File



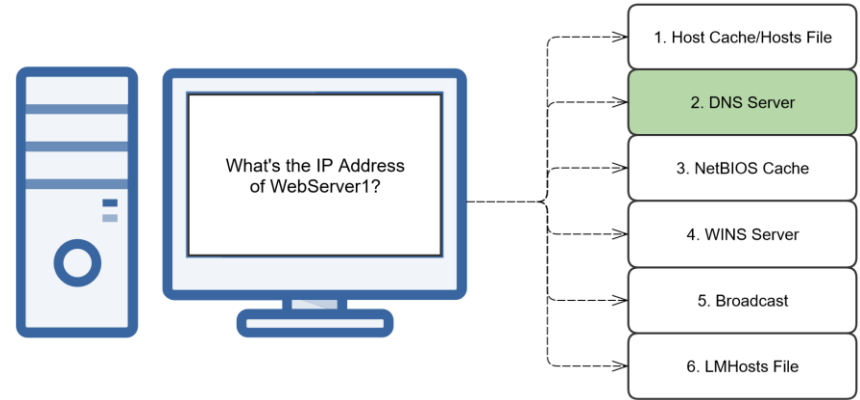
- Your computer caches DNS query responses in DNS cache and it always checks there first.
- We can view a computer's DNS cache with the following command:
 - `ipconfig /displaydns`
- Windows has a “Hosts” file where you can manually map domain names / host names to IP addresses.
 - Any entry in the “Hosts” file is added to the DNS Cache
 - `C:\WINDOWS\System32\drivers\etc`



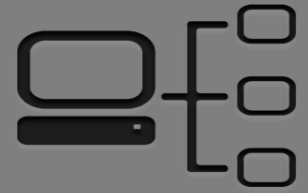
Step 2: DNS Server



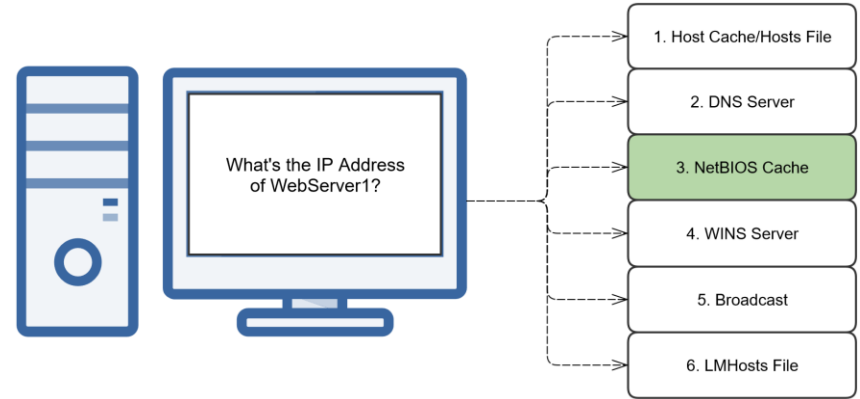
- If your computer cannot find the domain name / host name in its Host Cache, it will query its configured DNS server in its TCP/IP settings.



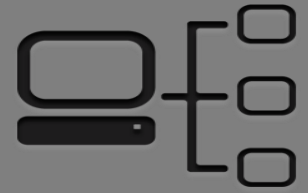
Step 3: NetBIOS Cache



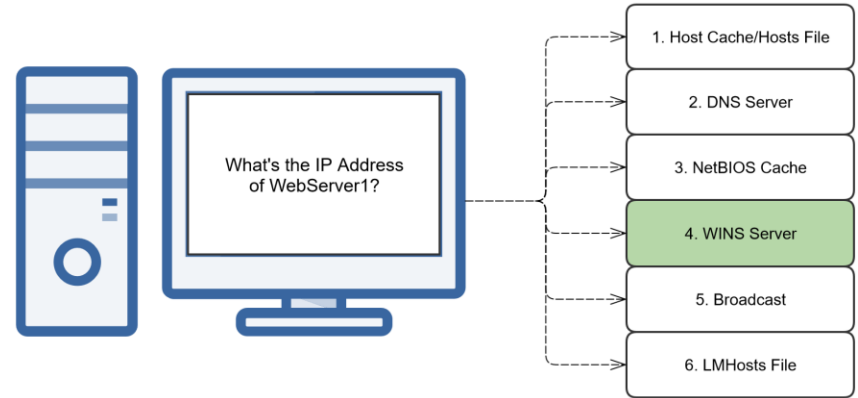
- The next step in the name resolution process is NetBIOS cache.
- NetBIOS names resolved by WINS server names are placed in a NetBIOS cache.
- We can use the following command to view a computer's netBIOS cache:
 - `nbtstat -c`



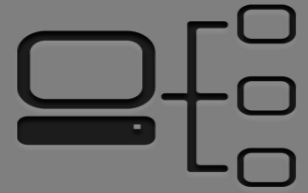
Step 4: WINS Server



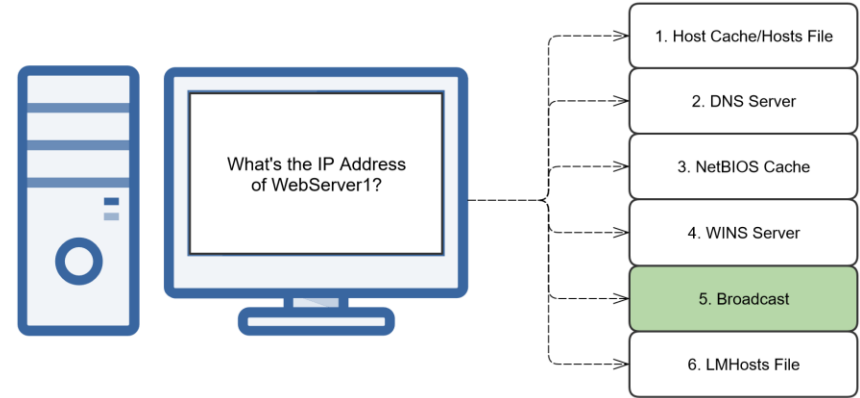
- If a NetBIOS name isn't in the computer's NetBIOS cache, the computer will then query the WINS server.



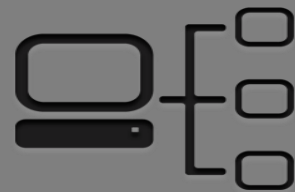
Step 5: Broadcast



- If WINS doesn't resolve a NetBIOS name, the computer will attempt to resolve the name using a network broadcast over its local subnet.



Step 6: LMHosts File



- The last step is to look up the the NetBIOS name in the LMHosts file if all other steps have failed to resolve the name's IP address.
- However, newer Windows operating systems don't include a working LMHosts file:
 - Windows 7 and Newer
 - Windows Server 2008 and Newer
 - You have to manually create an LMHosts file on these operating systems
 - C:\WINDOWS\System32\drivers\etc

