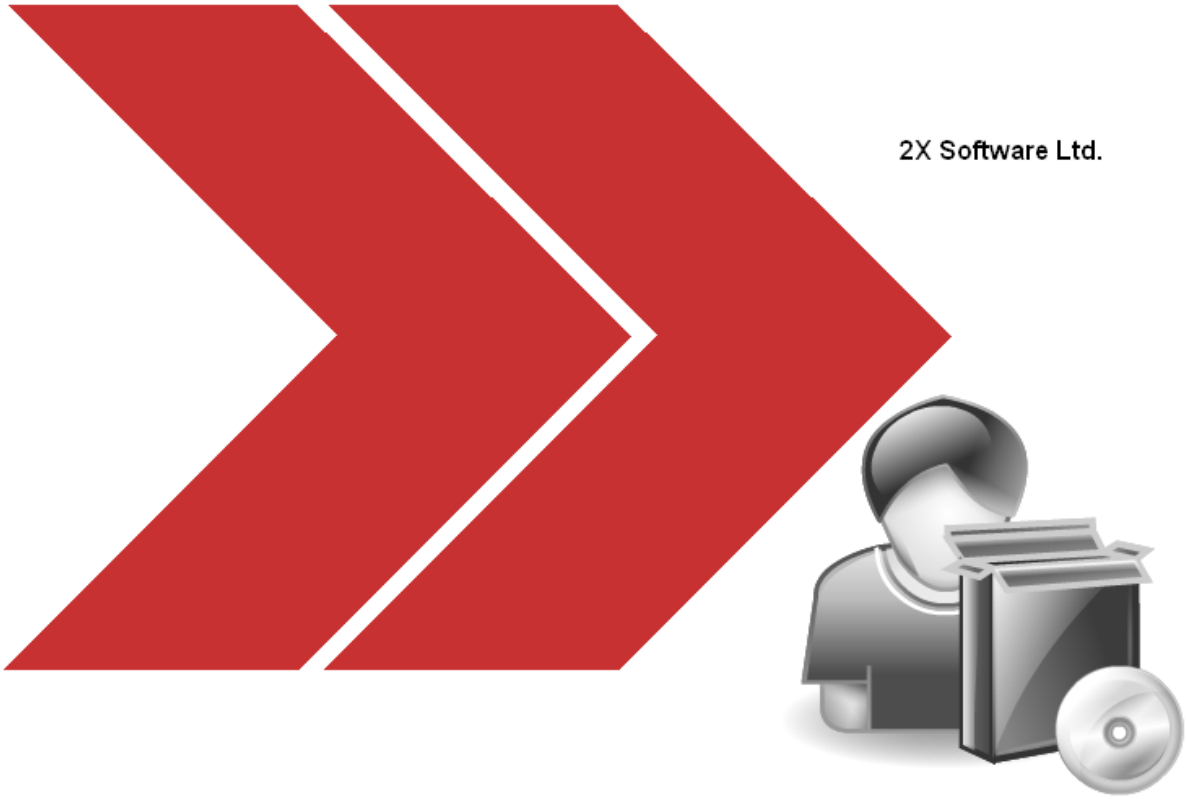
Release Version 4.1

The 2X Software Server Based Computing Guide



Information in this document is subject to change without notice. Companies, names, and data used in examples herein are fictitious unless otherwise noted. No part of this document may be reproduced or transmitted in any form or by any means, electronic or mechanical, for any purpose, without the express written permission of 2X SOFTWARE Ltd.

2X ApplicationServer and LoadBalancer, 2X VirtualDesktopServer and 2X ThinClientServer are copyright of 2X SOFTWARE Ltd.1999-2010 2X SOFTWARE Ltd. All rights reserved.

Table of Contents

- Advantages of 2X Server Based Computing 4
  - Take the fast track to easy and cost-effective Thin Client Computing 4
- Introduction 5
  - What is 2X ApplicationServer & LoadBalancer? 5
  - What is 2X VirtualDesktopServer? 5
  - What is 2X ThinClientServer? 5
- Solutions 6
  - 2X ApplicationServer & LoadBalancer scenarios 6
    - Single Farm Solution with one Terminal Server 6
    - Single Farm Solution with Mixed Desktops 8
    - Load balancing Citrix Solution 10
    - Direct Mode Client Connections 11
    - Gateway (Regular / SSL) Mode Client Connections 12
    - Mixed Mode (Direct / Regular / SSL) Client Connections 13
    - Single Farm Solution with Public & Private 2X Client Gateway 14
    - Single Farm Solution with Dual 2X Client Gateway 16
    - Single Farm Solution with Citrix & MS Terminal Server 18
    - High Availability with Multiple Gateways and 2X Web Access Portals. 20
    - Multiple Client Gateways, Web Access Portals and Publishing Agents using Direct Mode for Terminal Server 22
    - High Availability with a single or dual f/w DMZ 24
    - Dual Firewall DMZ 26
  - 2X VirtualDesktopServer scenarios 28
    - Load balancing VDI Solution 28
    - Single Farm Solution with one Virtual Host 30
    - Virtual Desktops in Mixed Mode (Direct / Regular / SSL) Client Connections 31
    - Virtual Desktops in Single Farm with Public & Private 2X Client Gateway 32
    - Virtual Desktops in Single Farm Solution with Dual 2X Client Gateway 33
  - 2X ThinClientServer scenarios 34
    - PCs and ThinClient accessing Microsoft, Citrix and Linux NX Terminal Servers 34

- 2X Virtual XP Desktops 36
- 2X Desktop with mixed Citrix and 2X Published Applications 38
- Multiple OS, Multiple desktops 40
- Mixed scenarios 42
- Multiple Farm Solution 42
- Terminology 43
- Client Connection Modes: 43
- SSL Mode 43
- Regular Mode 43
- Direct Mode 43
- 2X VirtualDesktopServer Components 43
- Port Reference 44
- Appendices 46
- Installation notes 46
- Setting Up 2X ThinClientServer 46
- Common issues 47

Advantages of 2X Server Based Computing

Server Based Computing – Less administration, higher availability, and big savings

Less Administration – Central management of users, patches (only server-based) software, (updates and upgrades) data, and backups

Higher Security – Elimination of viruses, Trojans or other vulnerabilities on clients, central management of security settings on the server and centralized backups
Hardware Independence – Support of virtually all client devices and computer hardware and very low system requirements

Easy Access – Employees, customers and Partners telework / roam more easily using published desktops and applications

Reduction in TCO – Total Cost of Ownership reduction by up to 50%

Take the fast track to easy and cost-effective Thin Client Computing

- **2X ApplicationServer for Windows Terminal Services** – Allows Windows applications to be tunneled seamlessly onto remote desktops and savings on administration & support.
- **2X VirtualDesktopServer** – Provides vendor independent virtual desktops and applications, accessible from anywhere while saving on administration & support.
- **2X LoadBalancer for Terminal Services / Citrix** – Provides load balancing, increased security and redundancy for Terminal Servers & Citrix servers.
- **2X ThinClientServer for Windows / Linux** – Converts PCs into thin clients & centrally manages thin client devices from any vendor.

Introduction

What is 2X ApplicationServer & LoadBalancer?

2X ApplicationServer & LoadBalancer is an easy-to-use centralized GUI Application that allows configuration of 2X ApplicationServer and 2X LoadBalancer. 2X ApplicationServer enables you to publish individual applications to your users' machines seamlessly, while 2X LoadBalancer is an automated load balancing/tunneling solution for Terminal Services & Citrix that enables you to distribute user sessions across terminal servers in such a way that the best performing terminal server is always selected to handle the incoming connection.

What is 2X VirtualDesktopServer?

2X VirtualDesktopServer is an application providing vendor independent virtual desktops and applications, accessible from anywhere. 2X VirtualDesktopServer allows you to publish full desktops and applications in a virtual environment with improved desktop manageability, security and performance.

For more information on which Virtual Desktop Infrastructure providers we support please visit our Approved VDI Software page.

What is 2X ThinClientServer?

2X ThinClientServer provides a complete solution for the central deployment, configuration and management of thin clients, and provides load balancing and redundancy of terminal servers.

A small footprint Linux distribution is deployed to thin clients (all popular thin clients are supported) OR to normal PCs, allowing you to convert existing PCs into thin clients. Thin client settings (screen size, which terminal servers to log into, etc.) can be centrally managed.

2X ThinClientServer is thin client vendor independent: You can use old computers, new low cost computers and dedicated thin client devices from different vendors - and manage all these thin clients through one consistent and open interface.

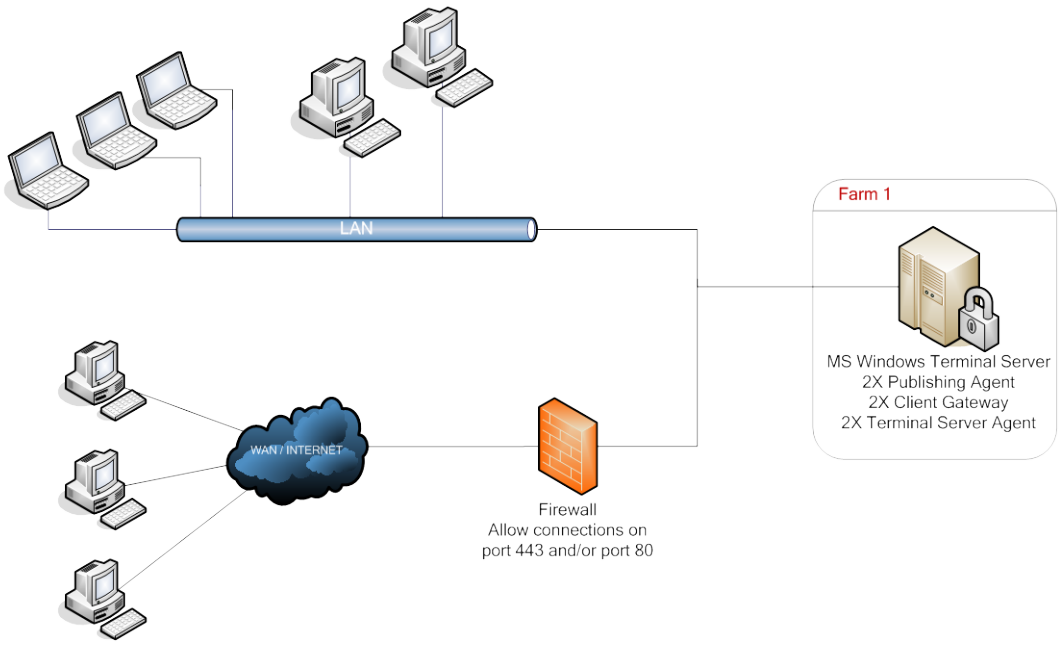
Rather than having to commit to one particular thin client vendor and be forced to buy all your hardware from that vendor, you have the flexibility to choose what's best for you and the possibility to re-use your old computer hardware.

Solutions

2X ApplicationServer & LoadBalancer scenarios

Single Farm Solution with one Terminal Server

This solution is implemented when one will need to publish applications and desktops from a single Terminal Server.



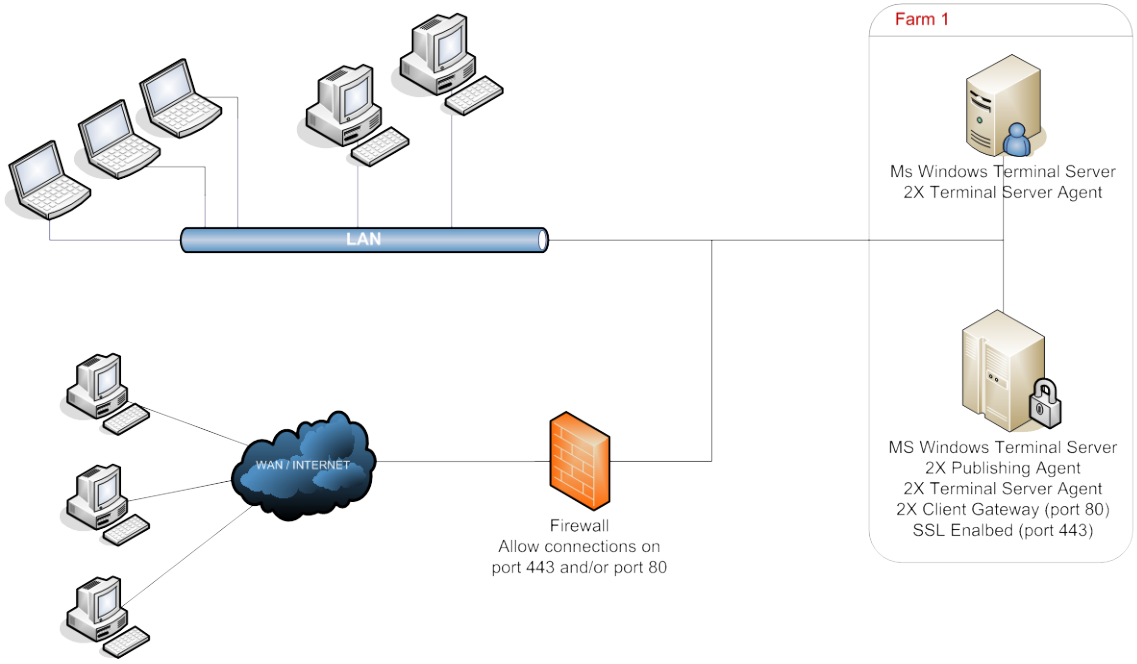
COMPONENTS

MS Terminal Server

Component	Installed
2X Client Gateway	Yes
2X Publishing Agent	Yes
2X Terminal Server Agent	Yes
2X VDS Agent	No

Single Farm Solution with Two Terminal Servers

This solution can be implemented by any organization that needs to load balance published applications and desktops between two terminal servers.



COMPONENTS

MS Terminal Server

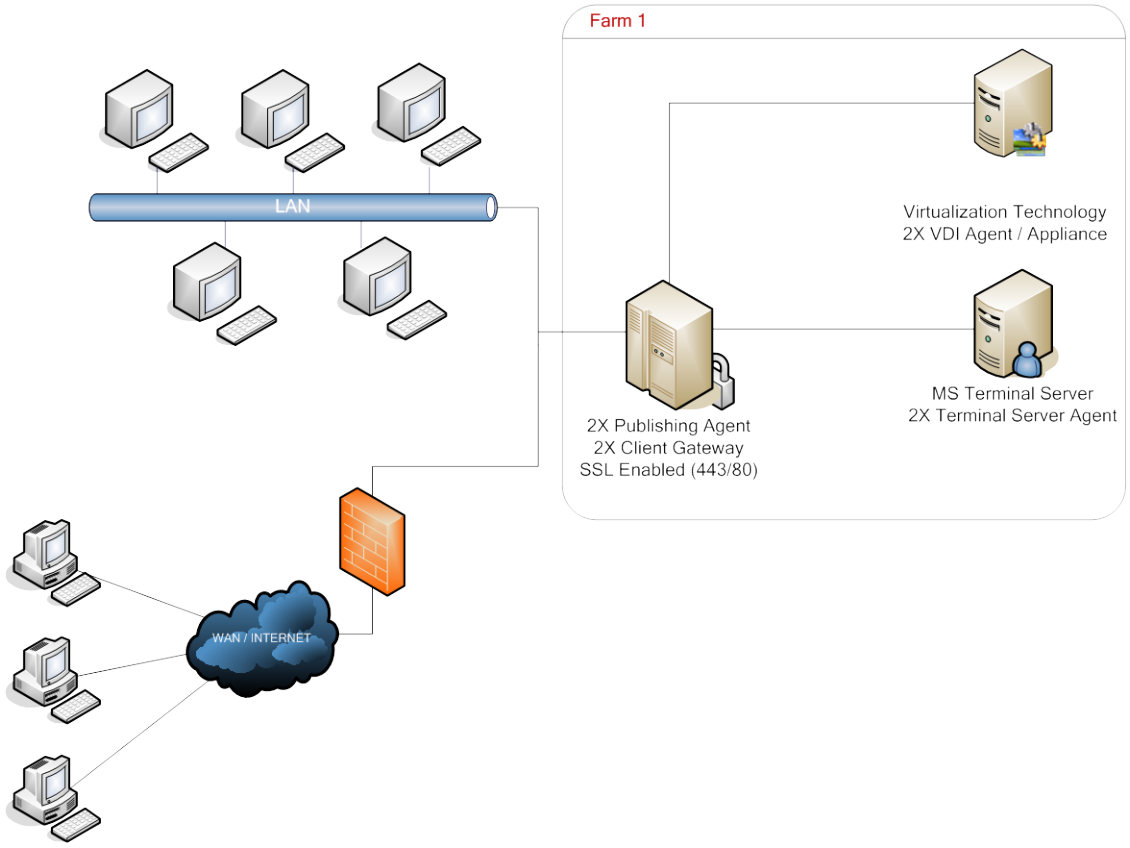
Component	Installed
2X Client Gateway	Yes
2X Publishing Agent	Yes
2X Terminal Server Agent	Yes
2X VDS Agent	No

MS Terminal Server

Component	Installed
2X Client Gateway	No
2X Publishing Agent	No
2X Terminal Server Agent	Yes
2X VDS Agent	No

Single Farm Solution with Mixed Desktops

By using this solution you are able to publish virtual desktops from the virtualization technology and remote desktops from the Microsoft Terminal Server.



COMPONENTS

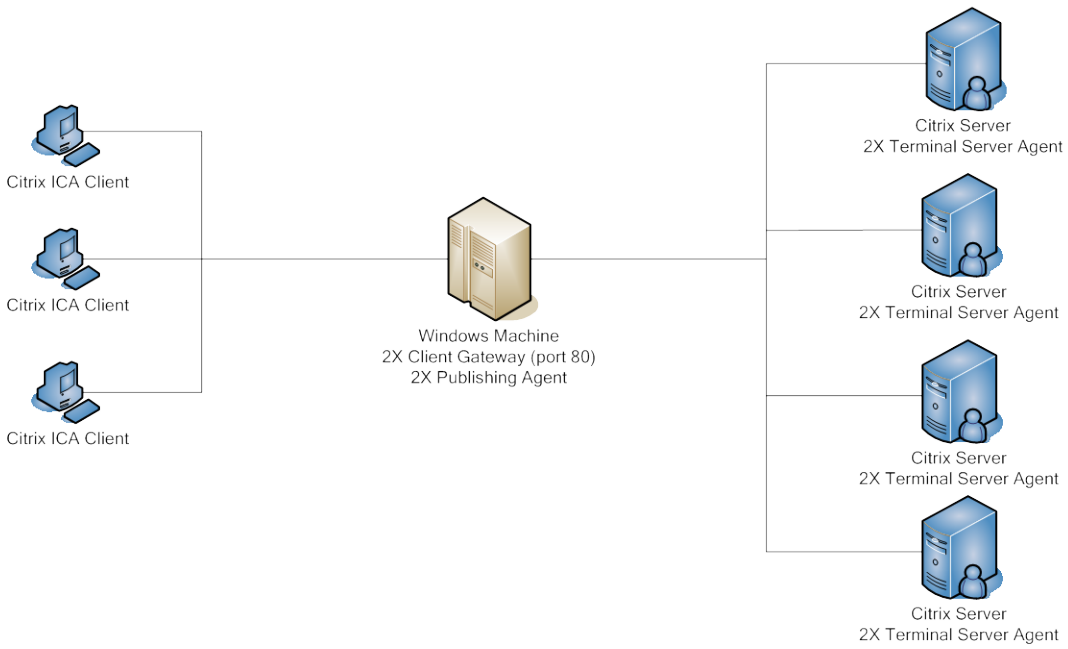
<table>
<tr>
<td> </td>
<td>MS Windows Machine
<table>
<tr><th>Component</th><th>Installed</th></tr>
<tr><td>2X Client Gateway</td><td>Yes</td></tr>
<tr><td>2X Publishing Agent</td><td>Yes</td></tr>
<tr><td>2X Terminal Server Agent</td><td>No</td></tr>
<tr><td>2X VDS Agent</td><td>No</td></tr>
</table></td>
</tr>
<tr>
<td> </td>
<td>MS Terminal Server
<table>
<tr><th>Component</th><th>Installed</th></tr>
<tr><td>2X Client Gateway</td><td>No</td></tr>
<tr><td>2X Publishing Agent</td><td>No</td></tr>
<tr><td>2X Terminal Server Agent</td><td>Yes</td></tr>
<tr><td>2X VDS Agent</td><td>No</td></tr>
</table></td>
</tr>
</table>

Virtual Host / Appliance

Component	Installed
2X Client Gateway	No
2X Publishing Agent	No
2X Terminal Server Agent	No
2X VDS Agent	Yes

Load balancing Citrix Solution

2X ApplicationServer & LoadBalancer is an easy and affordable solution to load balance Citrix Servers. Install 2X Client Gateway and 2X Publishing Agent on a MS Windows Machine. Then install 2X Terminal Server Agent on each Citrix Server. Citrix ICA connections will be tunneled through the 2X Client Gateway.



COMPONENTS

MS Windows Machine

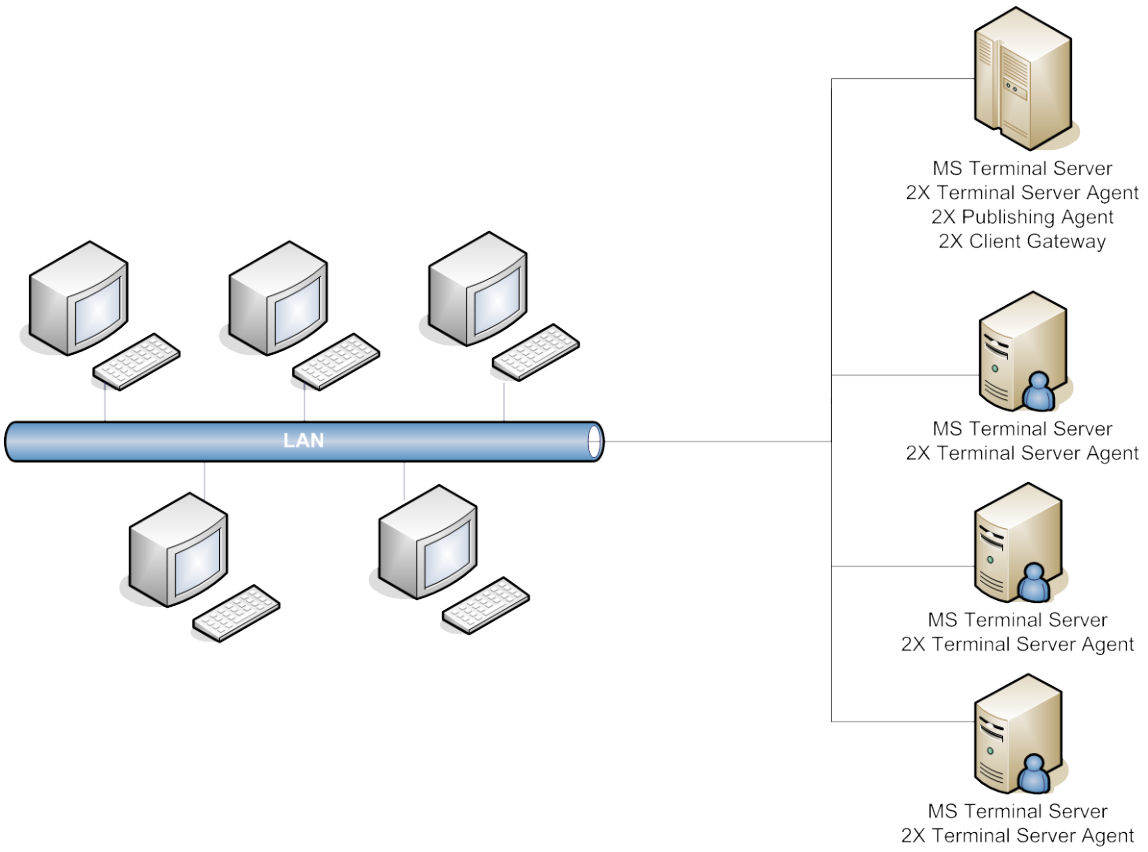
Component	Installed
2X Client Gateway	Yes
2X Publishing Agent	Yes
2X Terminal Server Agent	No
2X VDS Agent	No

Citrix Server

Component	Installed
2X Client Gateway	No
2X Publishing Agent	No
2X Terminal Server Agent	Yes
2X VDS Agent	No

Direct Mode Client Connections

Clients can connect using the direct mode with any MS Terminal Server. Clients will first ask the 2X Publishing Agent for the best available Terminal Server and they will connect directly to the preferred MS Terminal Server. This type of connection is ideal for a LAN environment.



COMPONENTS

MS Terminal Server

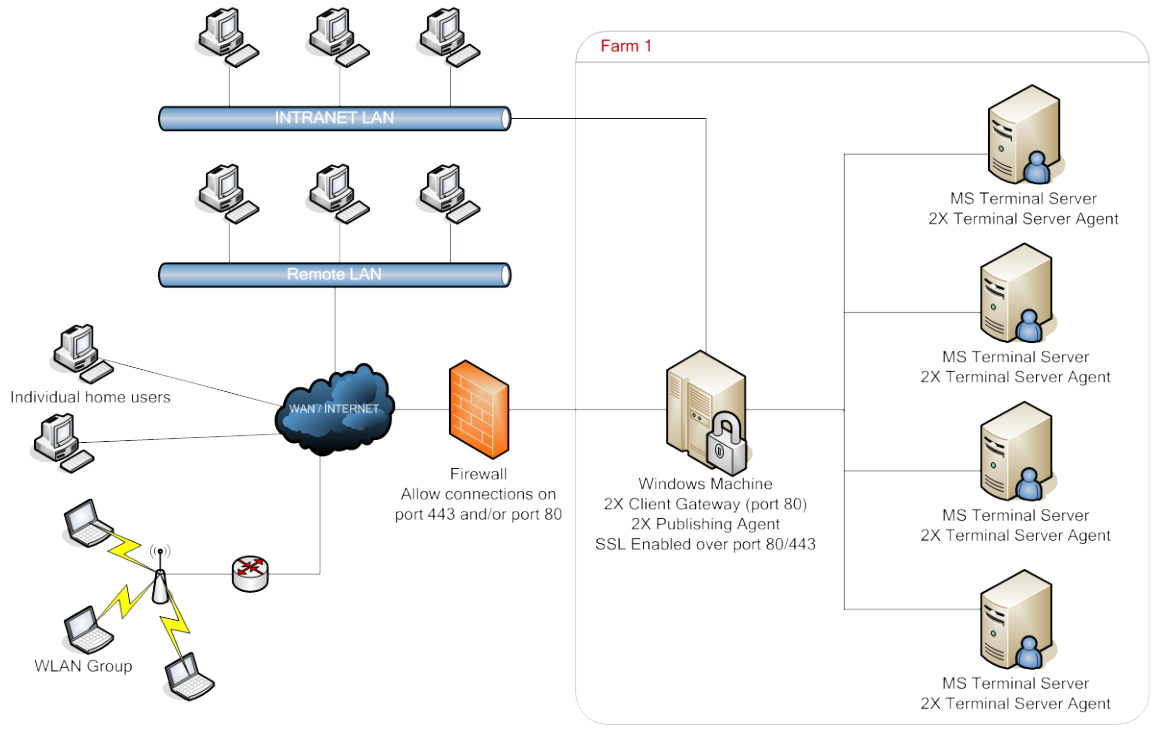
Component	Installed
2X Client Gateway	Yes
2X Publishing Agent	Yes
2X Terminal Server Agent	Yes
2X VDS Agent	No

MS Terminal Server

Component	Installed
2X Client Gateway	No
2X Publishing Agent	No
2X Terminal Server Agent	Yes
2X VDS Agent	No

Gateway (Regular / SSL) Mode Client Connections

Clients can connect using Gateway or SSL mode with the 2X Client Gateway machine. This machine will listen for RDP over SSL connections and will forward traffic to the MS Terminal Server according to their load status. These connection modes are ideal for roaming clients (connecting over the internet).



COMPONENTS

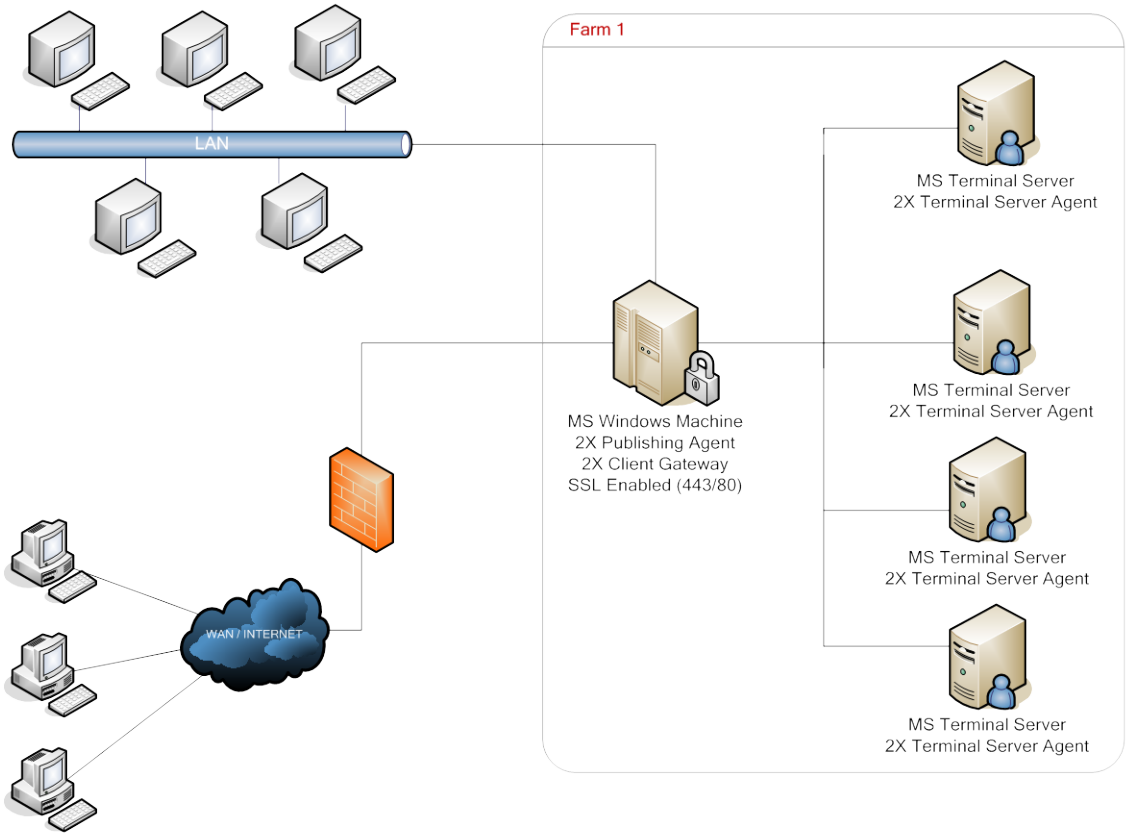
<table>
<tr>
<td> </td>
<td>MS Windows Machine

<table>
<tr><th>Component</th><th>Installed</th></tr>
<tr><td>2X Client Gateway</td><td>Yes</td></tr>
<tr><td>2X Publishing Agent</td><td>Yes</td></tr>
<tr><td>2X Terminal Server Agent</td><td>No</td></tr>
<tr><td>2X VDS Agent</td><td>No</td></tr>
</table>
</td>
</tr>
<tr>
<td> </td>
<td>MS Terminal Server

<table>
<tr><th>Component</th><th>Installed</th></tr>
<tr><td>2X Client Gateway</td><td>No</td></tr>
<tr><td>2X Publishing Agent</td><td>No</td></tr>
<tr><td>2X Terminal Server Agent</td><td>Yes</td></tr>
<tr><td>2X VDS Agent</td><td>No</td></tr>
</table>
</td>
</tr>
</table>

Mixed Mode (Direct / Regular / SSL) Client Connections

LAN clients could connect with the MS Terminal Server in a direct mode while WAN client could connect using SSL mode. 2X ApplicationServer & LoadBalancer is able to handle different modes concurrently.

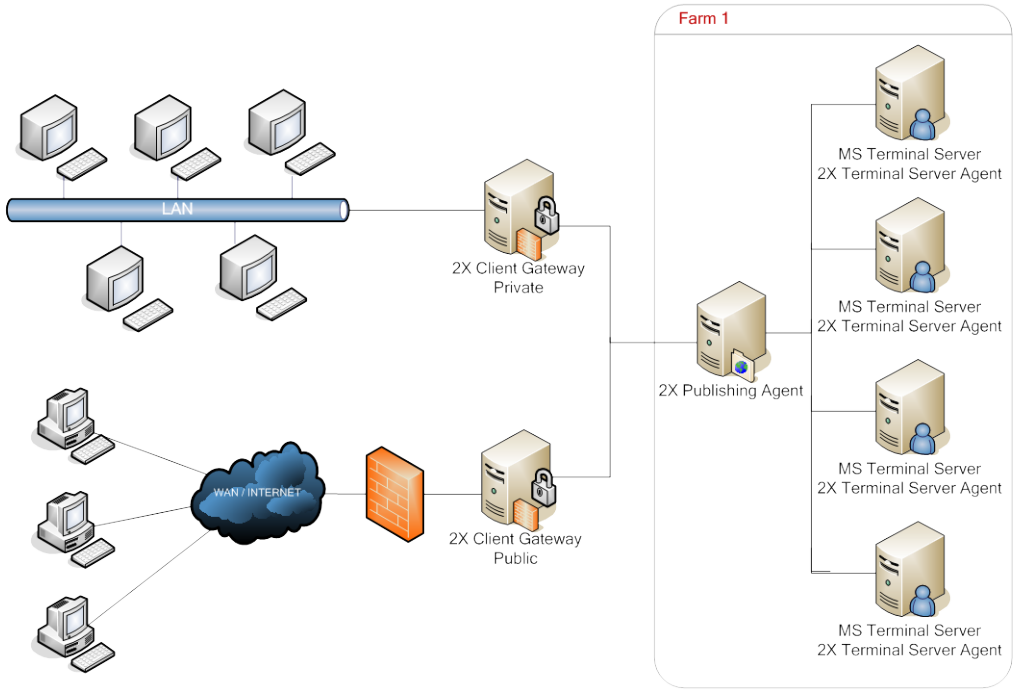


COMPONENTS

<table>
<tr>
<td> </td>
<td>
MS Windows Machine
<table>
<tr><th>Component</th><th>Installed</th></tr>
<tr><td>2X Client Gateway</td><td>Yes</td></tr>
<tr><td>2X Publishing Agent</td><td>Yes</td></tr>
<tr><td>2X Terminal Server Agent</td><td>No</td></tr>
<tr><td>2X VDS Agent</td><td>No</td></tr>
</table>
</td>
</tr>
<tr>
<td> </td>
<td>
MS Terminal Server
<table>
<tr><th>Component</th><th>Installed</th></tr>
<tr><td>2X Client Gateway</td><td>No</td></tr>
<tr><td>2X Publishing Agent</td><td>No</td></tr>
<tr><td>2X Terminal Server Agent</td><td>Yes</td></tr>
<tr><td>2X VDS Agent</td><td>No</td></tr>
</table>
</td>
</tr>
</table>

Single Farm Solution with Public & Private 2X Client Gateway

This solution is ideal for environments where one would like to dedicate a machine (2X Client Gateway Public) to accept WAN RDP connection and another machine (2X Client Gateway Private) to accept LAN RDP connections. Both 2X Client Gateways must be configured to connect with the same 2X Publishing Agent (using the Advanced Client Gateway Settings).



COMPONENTS

MS Windows Machine (Public & Private)

Component	Installed
2X Client Gateway	Yes
2X Publishing Agent	No
2X Terminal Server Agent	No
2X VDS Agent	No

MS Windows Machine

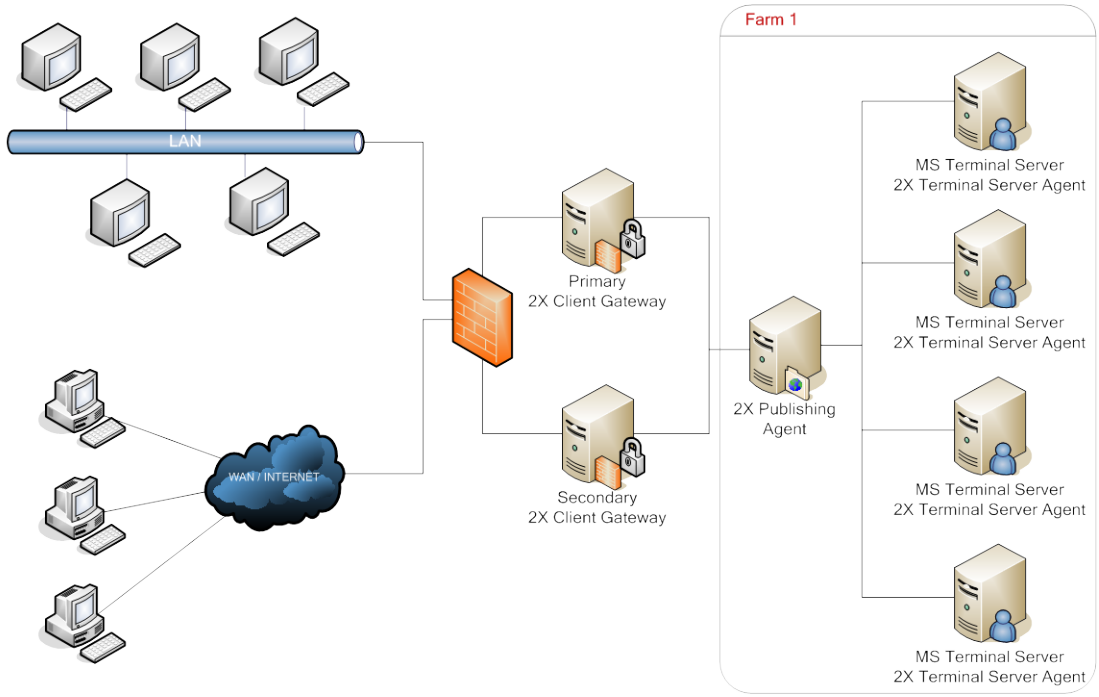
Component	Installed
2X Client Gateway	No
2X Publishing Agent	Yes
2X Terminal Server Agent	No
2X VDS Agent	No

MS Terminal Server

Component	Installed
2X Client Gateway	No
2X Publishing Agent	No
2X Terminal Server Agent	Yes
2X VDS Agent	No

Single Farm Solution with Dual 2X Client Gateway

This solution is ideal for high availability environments. Clients must be configured to connect with a Primary and a Secondary Server. Primary and Secondary 2X Client Gateways must be configured to connect with the same 2X Publishing Agent (using the Advanced Client Gateway Settings). When the primary 2X Client Gateway is not available, clients will be able to connect with the secondary 2X Client Gateway.



COMPONENTS

MS Windows Machine

Component	Installed
2X Client Gateway	Yes
2X Publishing Agent	No
2X Terminal Server Agent	No
2X VDS Agent	No

MS Windows Machine

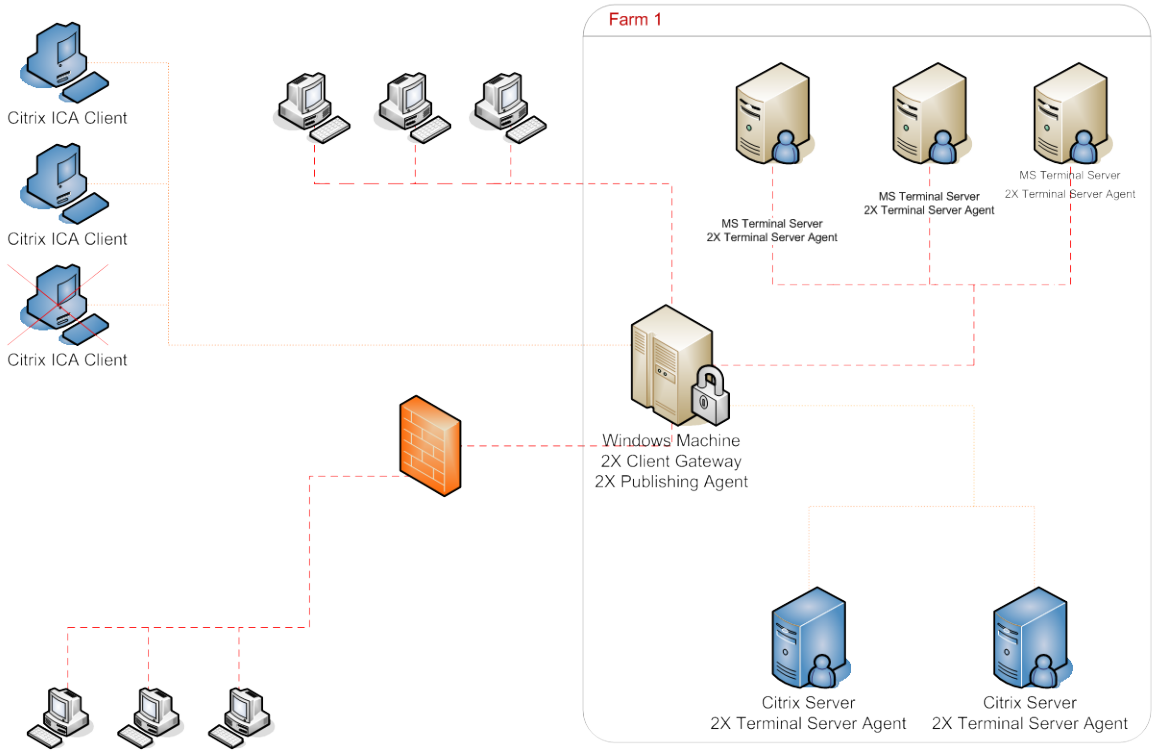
Component	Installed
2X Client Gateway	No
2X Publishing Agent	Yes
2X Terminal Server Agent	No
2X VDS Agent	No

MS Terminal Server

Component	Installed
2X Client Gateway	No
2X Publishing Agent	No
2X Terminal Server Agent	Yes
2X VDS Agent	No

Single Farm Solution with Citrix & MS Terminal Server

2X ApplicationServer & LoadBalancer product is ideal for a Citrix & MS Terminal Server Environments. This scenario is ideally used when migrating from Citrix to 2X solutions. 2X Terminal Server Agent must be installed on the MS Terminal Servers and Citrix Servers.



COMPONENTS

MS Windows Machine

Component	Installed
2X Client Gateway	Yes
2X Publishing Agent	Yes
2X Terminal Server Agent	No
2X VDS Agent	No

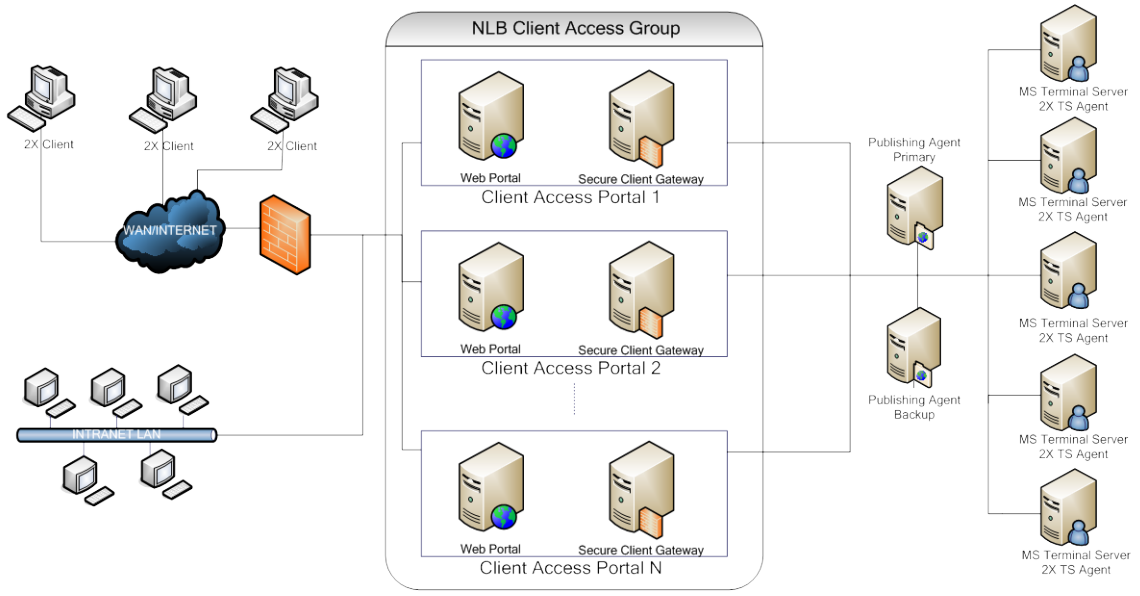
MS Terminal Server

Component	Installed
2X Client Gateway	No
2X Publishing Agent	No
2X Terminal Server Agent	Yes
2X VDS Agent	No

Citrix Server

Component	Installed
2X Client Gateway	No
2X Publishing Agent	No
2X Terminal Server Agent	Yes
2X VDS Agent	No

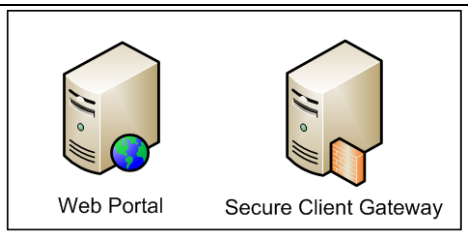
High Availability with Multiple Gateways and 2X Web Access Portals.



This solution is ideal for high availability environments with more than 300 concurrent users connected in SSL mode. Each client gateway should optimally handle 300 to 500 concurrent user connections* and this can be scaled horizontally accordingly.

*300 users through SSL tunnelled gateway mode, 500 standard, 2X gateway connections
Assuming the gateway machine is only acting as such (no other demanding services using these machines)

All Secure Client Gateways must be configured to connect with the same Publishing Agent and Backup Publishing Agent (using the Advanced Client Gateway Settings see above).



Client Access Portal n

MS Windows Machine

Component	Installed
2X Client Gateway	Yes
2X Publishing Agent	No
2X Terminal Server Agent	No
2X VDS Agent	No
2X Web Access Portal	Yes

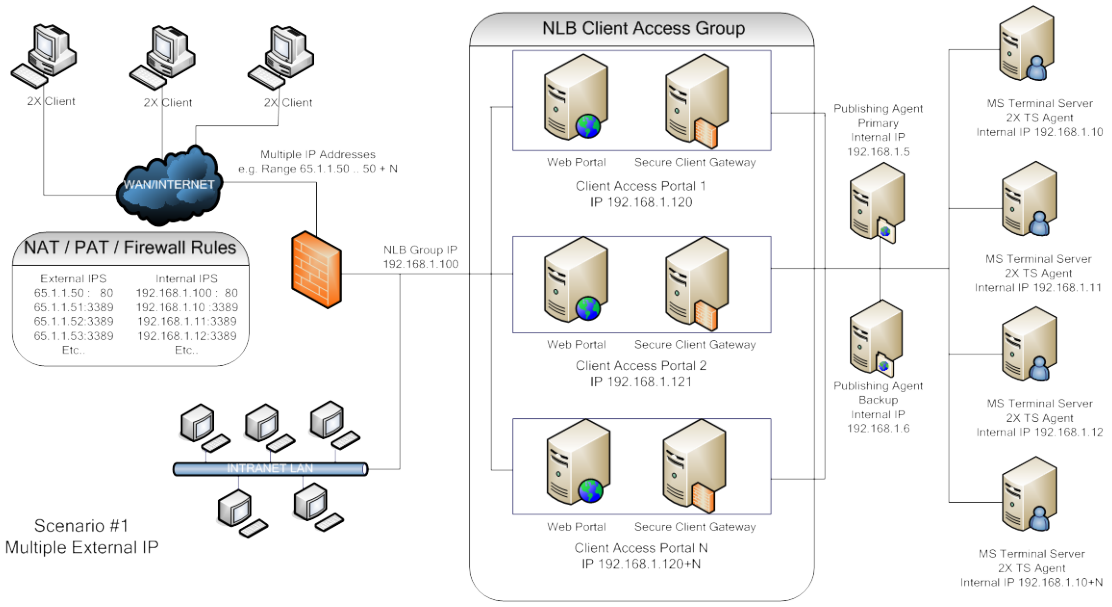
MS Windows Machine

Component	Installed
2X Client Gateway	No
2X Publishing Agent	Yes
2X Terminal Server Agent	No
2X VDS Agent	No
2X Redundancy Service	Yes

MS Terminal Server

Component	Installed
2X Client Gateway	No
2X Publishing Agent	No
2X Terminal Server Agent	Yes
2X VDS Agent	No

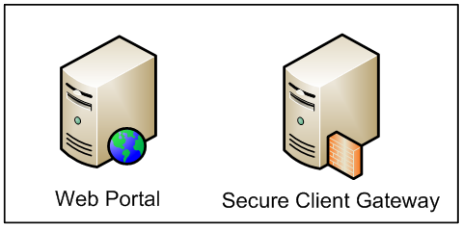
Multiple Client Gateways, Web Access Portals and Publishing Agents using Direct Mode for Terminal Server



This solution combines the High Availability solutions with a non-gateway connection. Each client gateway will only be used until a connection is made to an available Terminal Server*. All Client Gateways must be configured to connect with the same Master and Backup Publishing Agent (using the Advanced Client Gateway Settings). Since Direct mode is going to be used but externally the client has no access to the internal IPs, the direct mode address needs to be overridden in the TS settings in the farm.

**Terminal Servers will be exposed on the internet via an NAT / PAT / Firewall Solution that must include the rules shown in the diagram.*

It is important to note that in direct mode connections preclude SSL connections.



Client Access Portal n

MS Windows Machine

Component	Installed
2X Client Gateway	Yes
2X Publishing Agent	No
2X Terminal Server Agent	No
2X VDS Agent	No
2X Web Access Portal	Yes

MS Windows Machine

Component	Installed
2X Client Gateway	No
2X Publishing Agent	Yes
2X Terminal Server Agent	No
2X VDS Agent	No
2X Redundancy Service	Yes

MS Terminal Server

Component	Installed
2X Client Gateway	No
2X Publishing Agent	No
2X Terminal Server Agent	Yes
2X VDS Agent	No

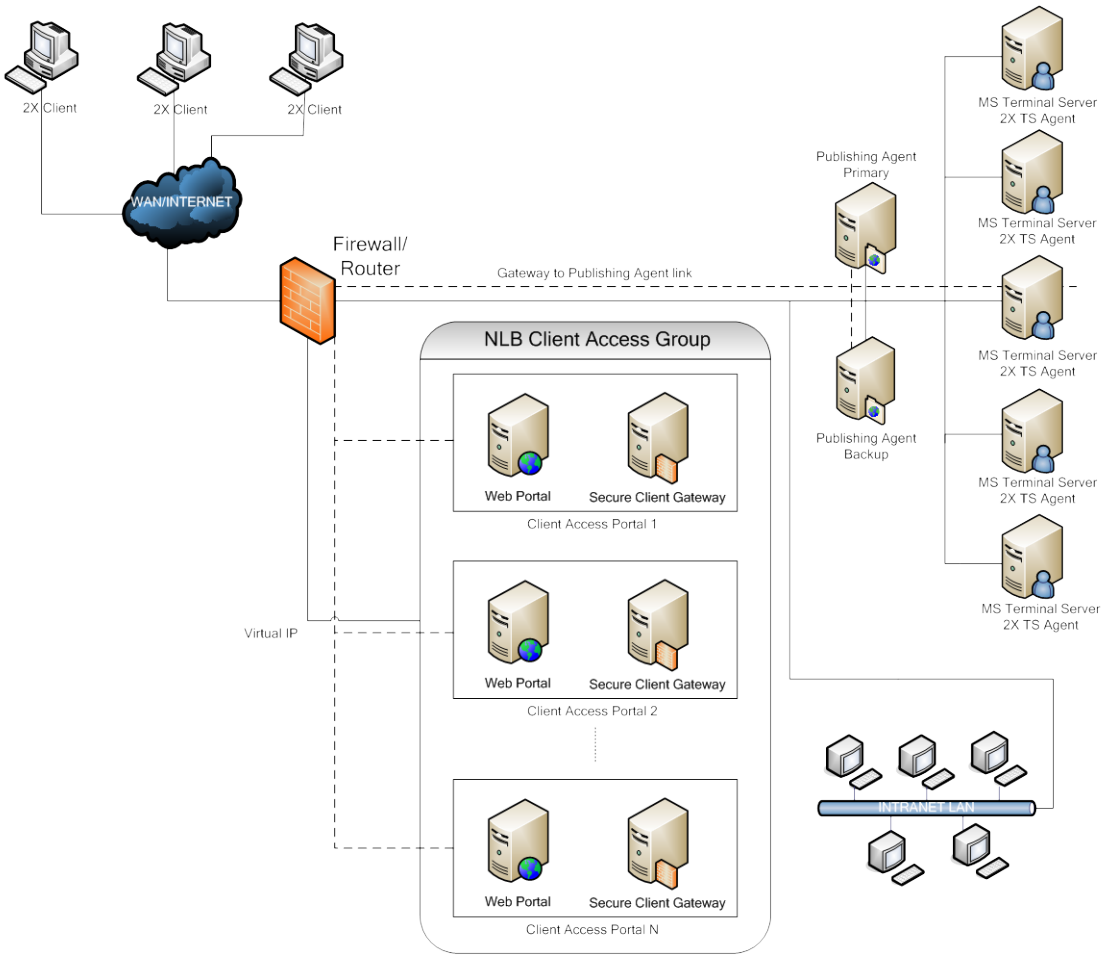
High Availability with a single or dual f/w DMZ

Many companies use the DMZ layout to separate the servers that handle exposed services from the ones that handle internal ones.

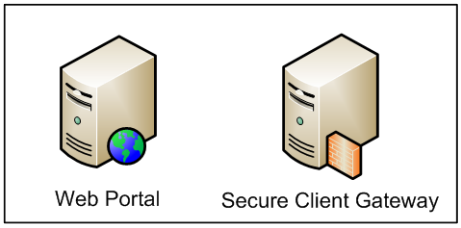
There are two types of DMZs; single and dual firewall DMZs with the latter being the more expensive but more secure. (In the dual firewall approach many people suggest using two different firewall technologies to avoid one weakness or one type of attack breaking both firewalls.)

The firewall between the gateways and the intranet must allow the gateways and the systems to connect to the publishing agents using the standard port.

Single Firewall DMZ



In a single firewall DMZ scenario, the firewall system must be capable to route a connection properly from the 2X Gateways to the 2X Publishing Agents. It is also responsible for the connections from internet to the virtual IP presented by NLB or other generic- protocol load balancing solution.



Client Access Portal n

MS Windows Machine

Component	Installed
2X Client Gateway	Yes
2X Publishing Agent	No
2X Terminal Server Agent	No
2X VDS Agent	No
2X Web Access Portal	Yes

MS Windows Machine

Component	Installed
2X Client Gateway	No
2X Publishing Agent	Yes
2X Terminal Server Agent	No
2X VDS Agent	No
2X Redundancy Service	Yes

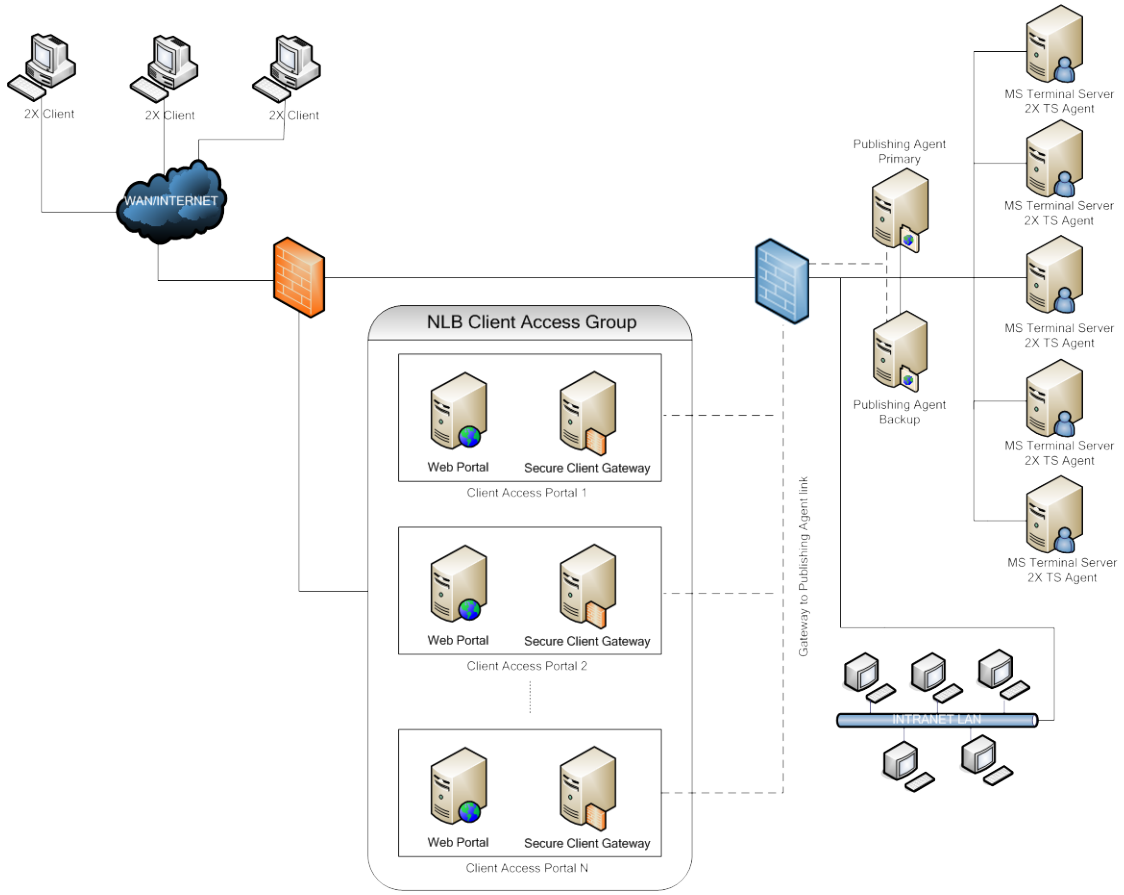
MS Terminal Server

Component	Installed
2X Client Gateway	No
2X Publishing Agent	No
2X Terminal Server Agent	Yes
2X VDS Agent	No

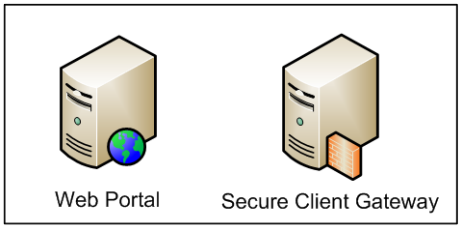
Standard Firewall solution

Alternate Firewall solution (optional but suggested)
For better isolation from attacks

Dual Firewall DMZ



In a dual firewall scenario the settings are simpler and the protection from external malicious agents is higher.



Client Access Portal n

MS Windows Machine

Component	Installed
2X Client Gateway	Yes
2X Publishing Agent	No
2X Terminal Server Agent	No
2X VDS Agent	No
2X Web Access Portal	Yes

MS Windows Machine

Component	Installed
2X Client Gateway	No
2X Publishing Agent	Yes
2X Terminal Server Agent	No
2X VDS Agent	No
2X Redundancy Service	Yes

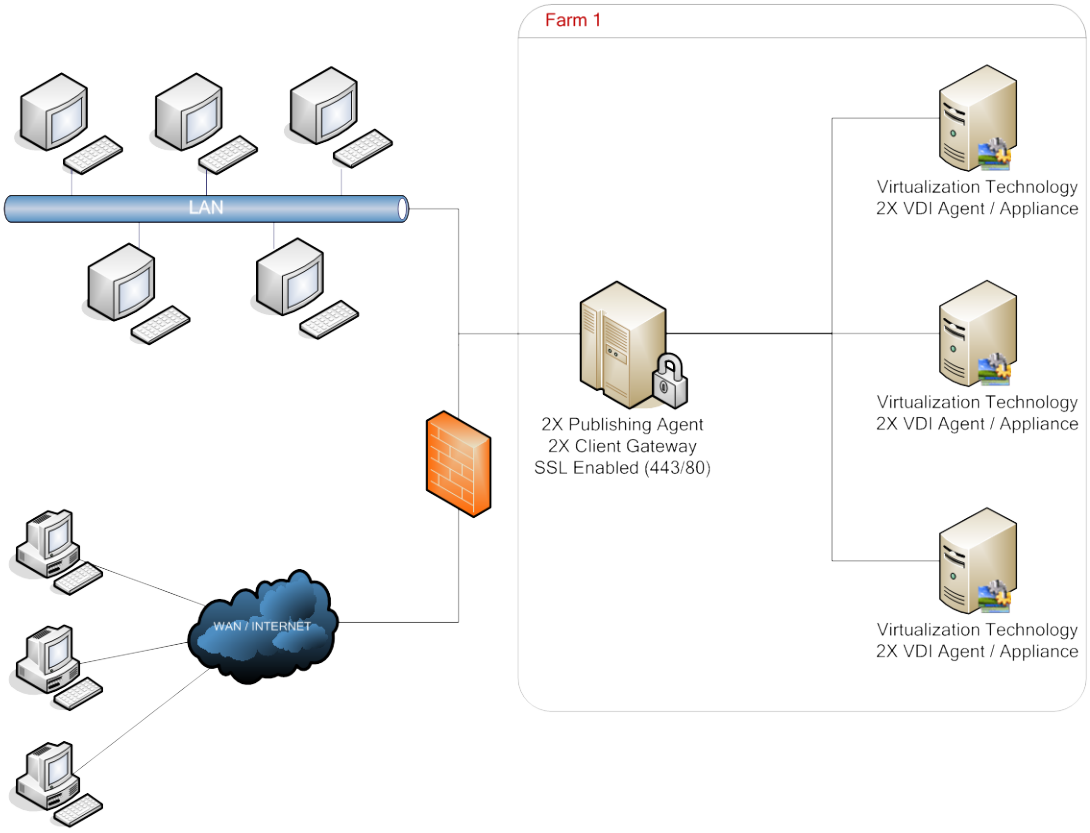
<table>
<tr>
<td> </td>
<td>MS Terminal Server

<table>
<tr><th>Component</th><th>Installed</th></tr>
<tr><td>2X Client Gateway</td><td>No</td></tr>
<tr><td>2X Publishing Agent</td><td>No</td></tr>
<tr><td>2X Terminal Server Agent</td><td>Yes</td></tr>
<tr><td>2X VDS Agent</td><td>No</td></tr>
</table>
</td>
</tr>
<tr>
<td> </td>
<td>Standard Firewall solution</td>
</tr>
<tr>
<td> </td>
<td>Alternate Firewall solution (optional but suggested)
For better isolation from attacks</td>
</tr>
</table>

2X VirtualDesktopServer scenarios

Load balancing VDI Solution

2X VirtualDesktopServer is an easy and affordable solution to load balance multiple virtualization technologies. The virtualization technologies can differ from each other. For more information on which Virtual Desktop Infrastructure providers we support please visit our Approved VDI Software page.



COMPONENTS

MS Windows Machine

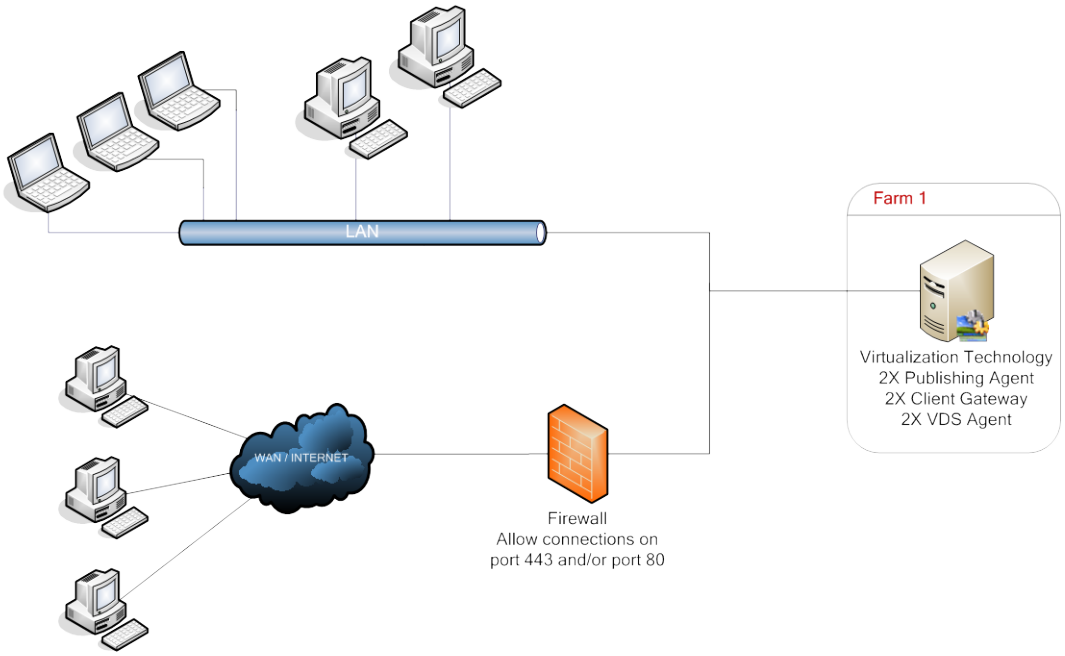
Component	Installed
2X Client Gateway	Yes
2X Publishing Agent	Yes
2X Terminal Server Agent	No
2X VDS Agent	No

Virtual Host / Appliance

Component	Installed
2X Client Gateway	No
2X Publishing Agent	No
2X Terminal Server Agent	No
2X VDS Agent	Yes

Single Farm Solution with one Virtual Host

This solution is implemented when one will need to publish virtual desktops from a single Virtual Host.

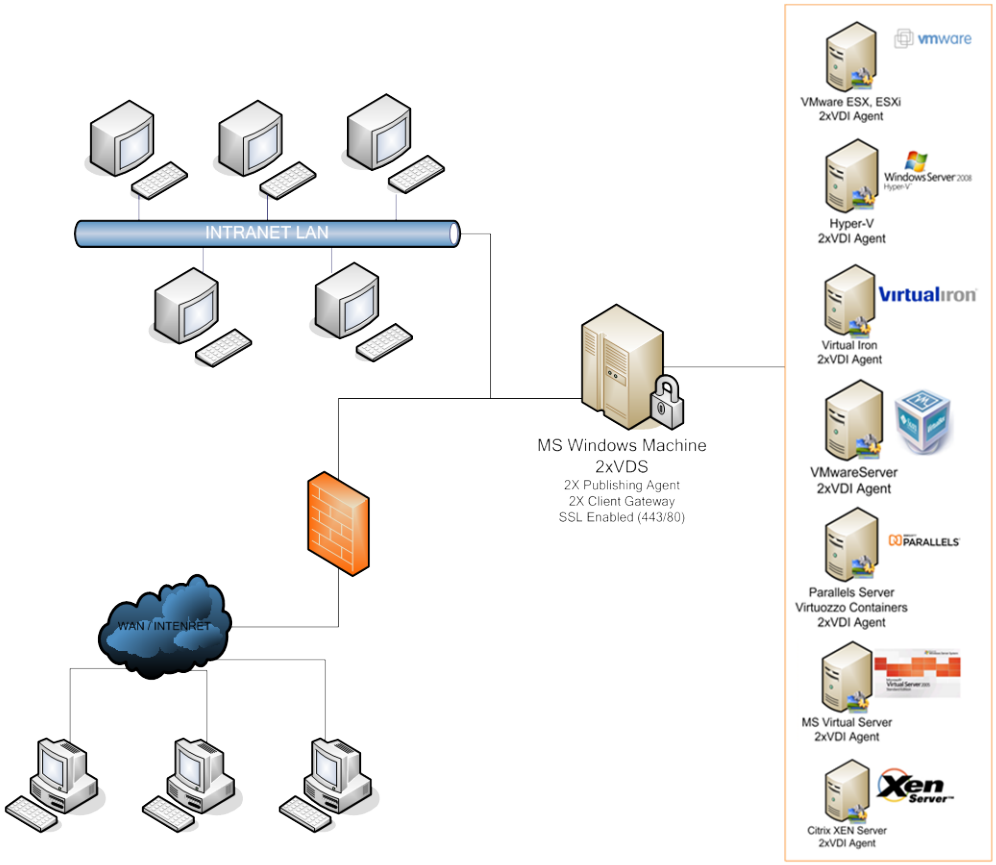


COMPONENTS

Virtual Host

Component	Installed
2X Publishing Agent	Yes
2X Client Gateway	Yes
2X Terminal Server Agent	No
2X VDS Agent	Yes

Virtual Desktops in Mixed Mode (Direct / Regular / SSL) Client Connections



COMPONENTS

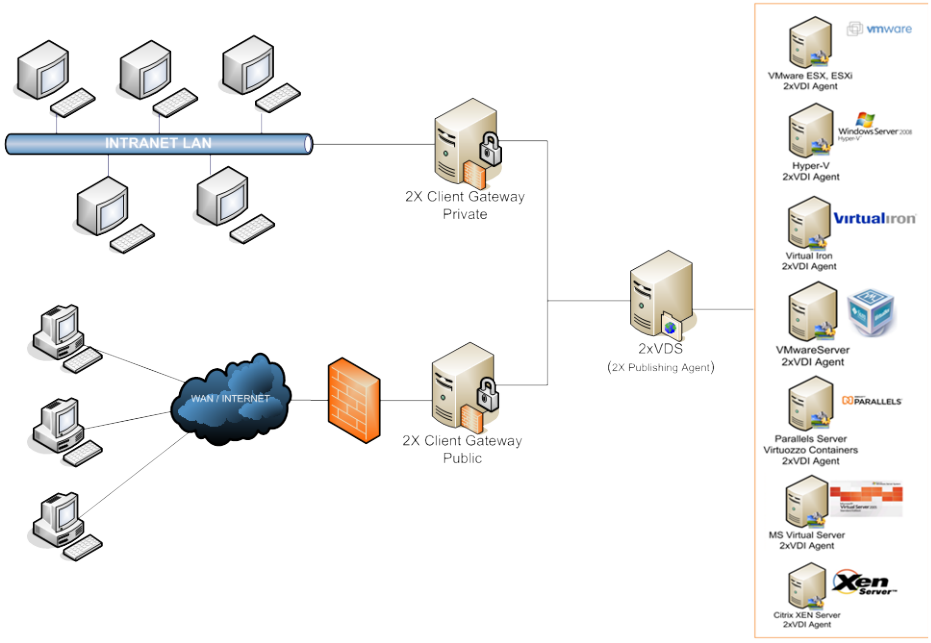
MS Windows Machine

Component	Installed
2X Client Gateway	Yes
2X Publishing Agent	Yes
2X Terminal Server Agent	No
2X VDS Agent	No

Virtual Host / Appliance

Component	Installed
2X Client Gateway	No
2X Publishing Agent	No
2X Terminal Server Agent	No
2X VDS Agent	Yes

Virtual Desktops in Single Farm with Public & Private 2X Client Gateway



COMPONENTS

MS Windows Machine (Public & Private)

Component	Installed
2X Client Gateway	Yes
2X Publishing Agent	No
2X Terminal Server Agent	No
2X VDS Agent	No

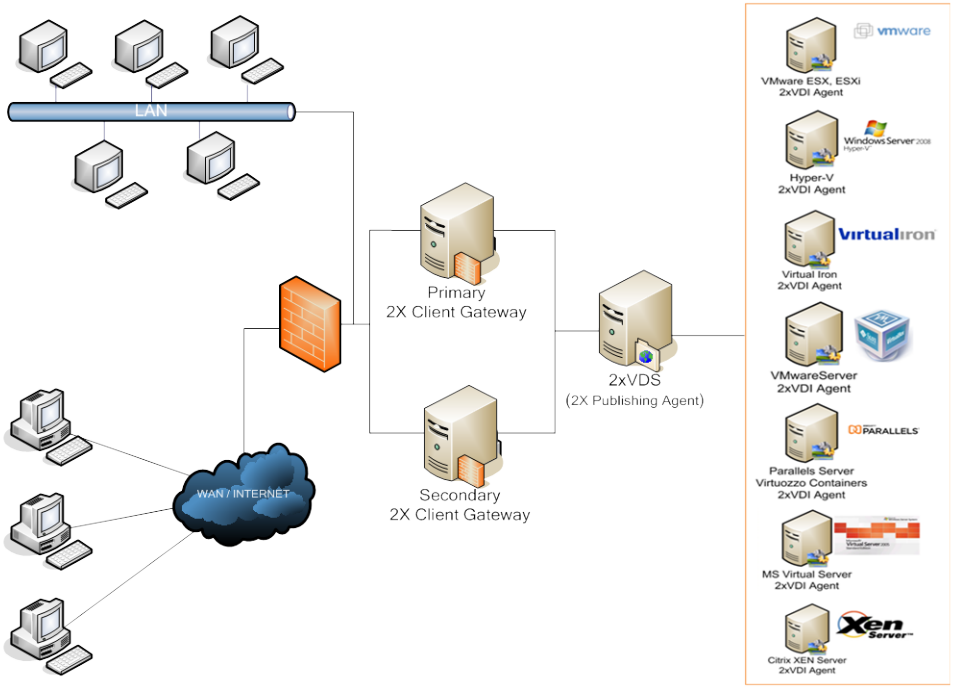
MS Windows Machine

Component	Installed
2X Client Gateway	No
2X Publishing Agent	Yes
2X Terminal Server Agent	No
2X VDS Agent	No

Virtual Host / Appliance

Component	Installed
2X Client Gateway	No
2X Publishing Agent	No
2X Terminal Server Agent	No
2X VDS Agent	Yes

Virtual Desktops in Single Farm Solution with Dual 2X Client Gateway



COMPONENTS

MS Windows Machine

Component	Installed
2X Client Gateway	Yes
2X Publishing Agent	No
2X Terminal Server Agent	No
2X VDS Agent	No

MS Windows Machine

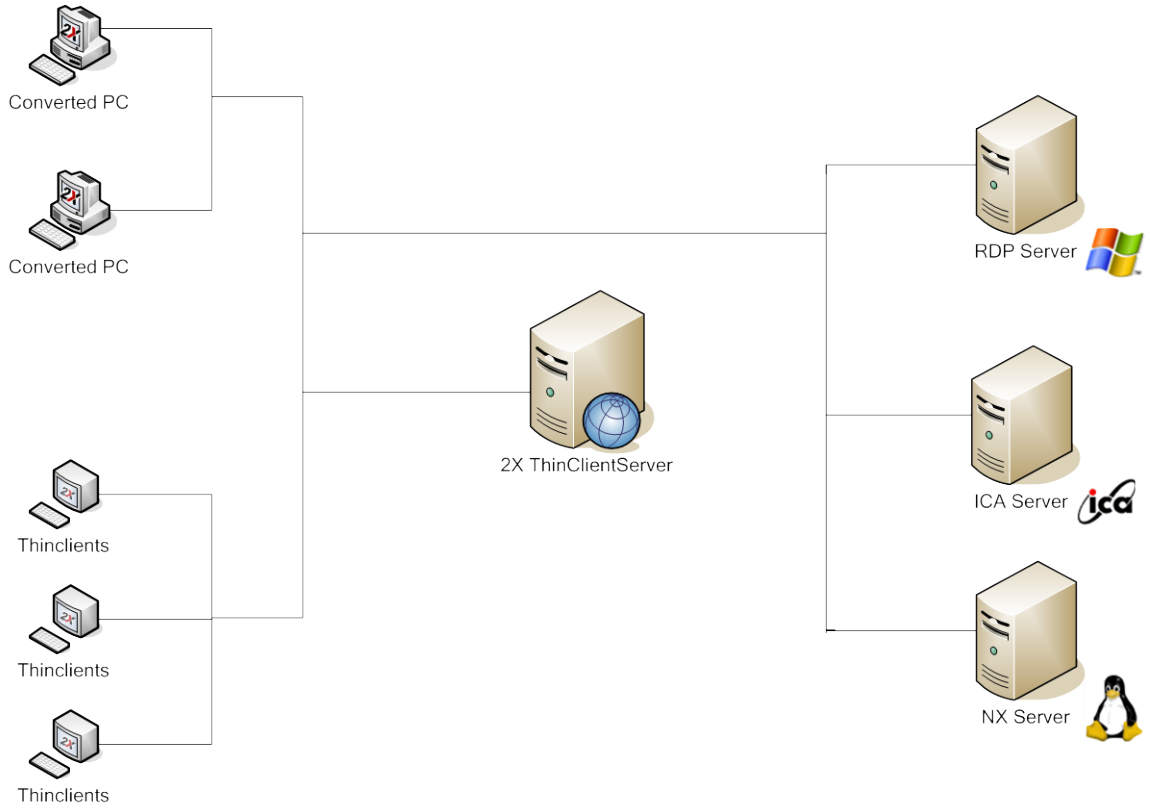
Component	Installed
2X Client Gateway	No
2X Publishing Agent	Yes
2X Terminal Server Agent	No
2X VDS Agent	No

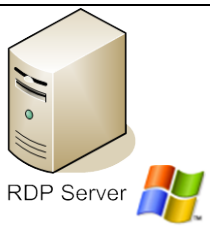
Virtual Host / Appliance

Component	Installed
2X Client Gateway	No
2X Publishing Agent	No
2X Terminal Server Agent	No
2X VDS Agent	Yes

2X ThinClientServer scenarios

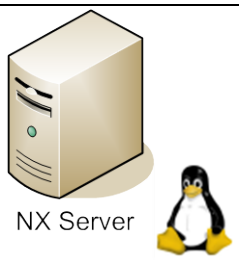
PCs and ThinClient accessing Microsoft, Citrix and Linux NX Terminal Servers



<table>
<tr>
<td>  </td>
<td>MS Windows Machine (RDP Server)

<table>
<tr><th>Component</th><th>Installed</th></tr>
<tr><td>2X Client Gateway</td><td>No</td></tr>
<tr><td>2X Publishing Agent</td><td>No</td></tr>
<tr><td>2X Terminal Server Agent</td><td>No</td></tr>
<tr><td>2X VDS Agent</td><td>No</td></tr>
</table></td>
</tr>
<tr>
<td> </td>
<td>MS Windows Machine Deploying Citrix ICA 10/11 server

<table>
<tr><th>Component</th><th>Installed</th></tr>
<tr><td>2X Client Gateway</td><td>No</td></tr>
<tr><td>2X Publishing Agent</td><td>No</td></tr>
<tr><td>2X Terminal Server Agent</td><td>No</td></tr>
<tr><td>2X VDS Agent</td><td>No</td></tr>
</table></td>
</tr>
</table>



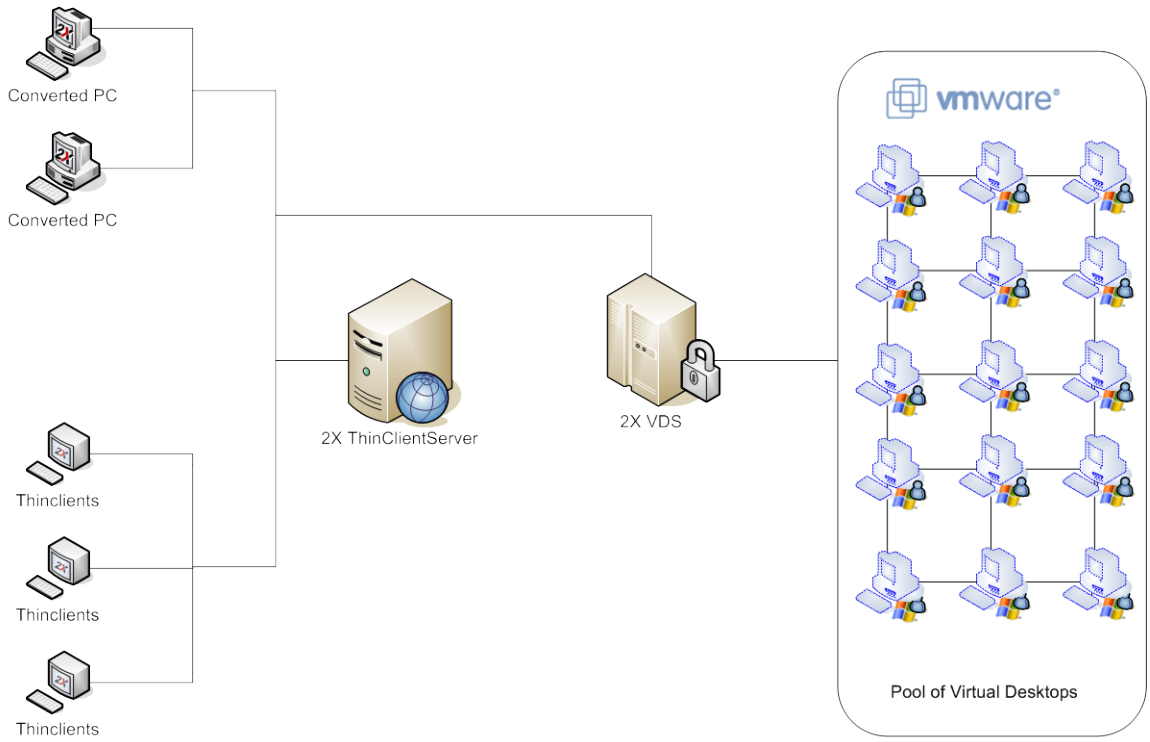
Linux Running an NX Server such as No machine

Component	Installed
2X Client Gateway	No
2X Publishing Agent	No
2X Terminal Server Agent	No
2X VDS Agent	No

Microsoft Windows Machine running XP, Vista, 2003, 2008, 2008 R2

Component	Installed
2X Thin Client Server	Yes
2X DHCP Helper	Yes
2X TFTP Server	Yes

2X Virtual XP Desktops

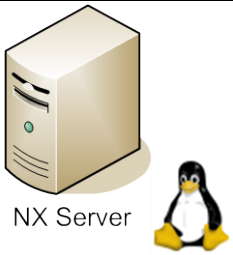


MS Windows Machine (RDP Server)

Component	Installed
2X Client Gateway	No
2X Publishing Agent	No
2X Terminal Server Agent	No
2X VDS Agent	No

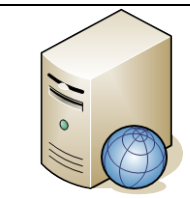
MS Windows Machine Deploying Citrix ICA 10/11 server

Component	Installed
2X Client Gateway	No
2X Publishing Agent	No
2X Terminal Server Agent	No
2X VDS Agent	No



Linux Running an NX Server such as No machine

Component	Installed
2X Client Gateway	No
2X Publishing Agent	No
2X Terminal Server Agent	No
2X VDS Agent	No

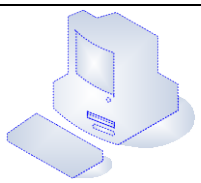


Microsoft Windows Machine running XP, Vista, 2003, 2008, 2008 R2

Component	Installed
2X Thin Client Server	Yes
2X DHCP Helper	Yes
2X TFTP Server	Yes

Microsoft Windows Machine running XP, Vista, 2003, 2008, 2008 R2

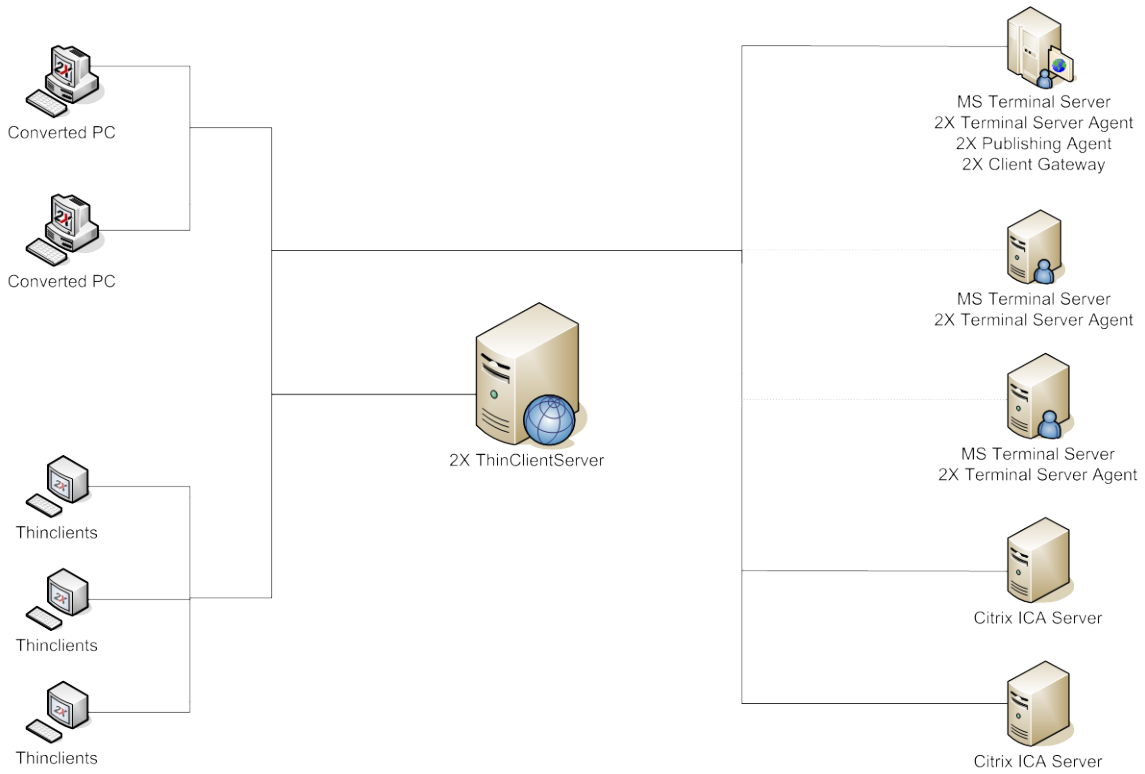
Component	Installed
2X Client Gateway	Yes
2X Publishing Agent	Yes
2X Terminal Server Agent	No
2X VDS Agent	No



Microsoft Windows Machine running XP, Vista, 2003, 2008, 2008 R2

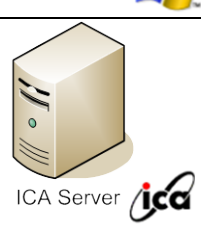
Component	Installed
2X Client Gateway	No
2X Publishing Agent	No
2X Terminal Server Agent	No
2X VDS Agent	No

2X Desktop with mixed Citrix and 2X Published Applications



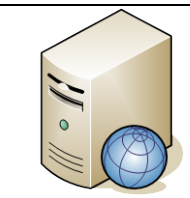
MS Windows Machine (RDP Server)

Component	Installed
2X Client Gateway	No
2X Publishing Agent	No
2X Terminal Server Agent	No
2X VDS Agent	No



MS Windows Machine Deploying Citrix ICA 10/11 server

Component	Installed
2X Client Gateway	No
2X Publishing Agent	No
2X Terminal Server Agent	No
2X VDS Agent	No



2X ThinClientServer

Microsoft Windows Machine running XP, Vista, 2003, 2008, 2008 R2

Component	Installed
2X Thin Client Server	Yes
2X DHCP Helper	Yes
2X TFTP Server	Yes

2X VDS

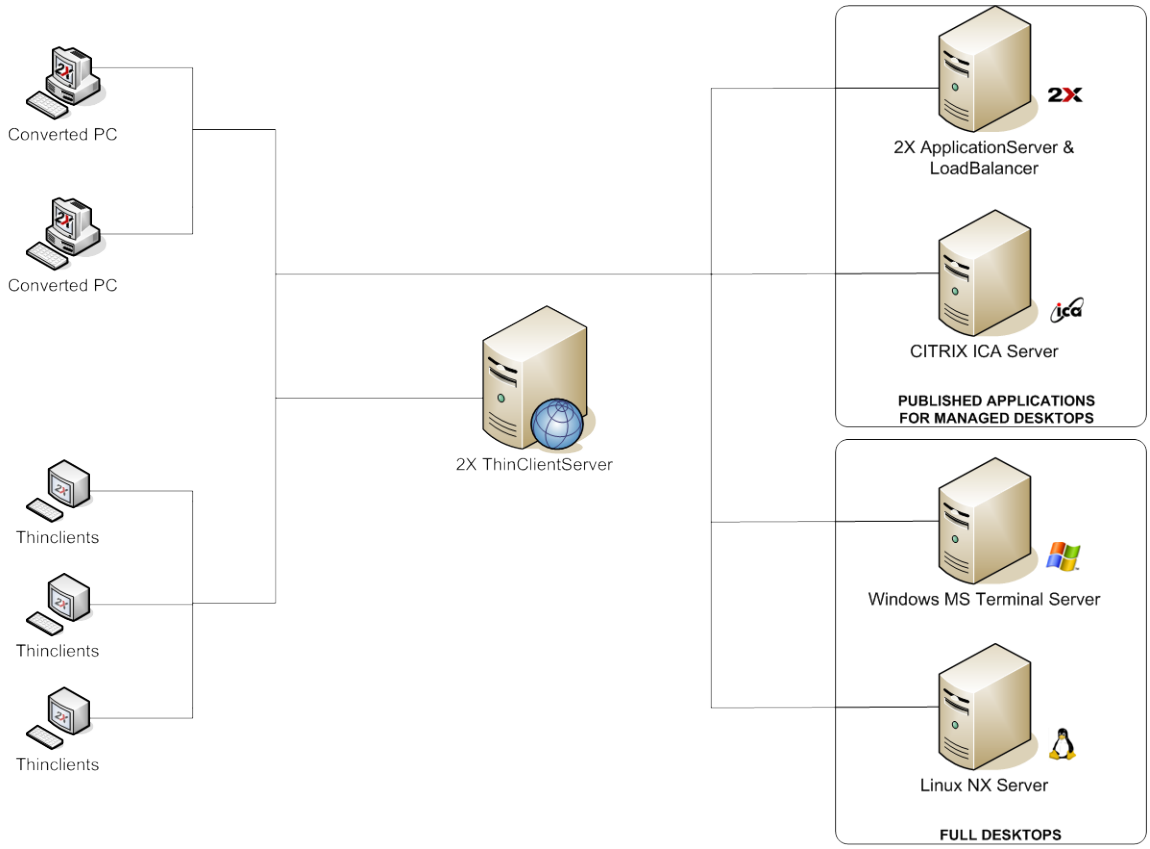
Microsoft Windows Machine running XP, Vista, 2003, 2008, 2008 R2

Component	Installed
2X Client Gateway	Yes
2X Publishing Agent	Yes
2X Terminal Server Agent	Yes
2X VDS Agent	No

MS Terminal Server

Component	Installed
2X Client Gateway	No
2X Publishing Agent	No
2X Terminal Server Agent	Yes
2X VDS Agent	No

Multiple OS, Multiple desktops



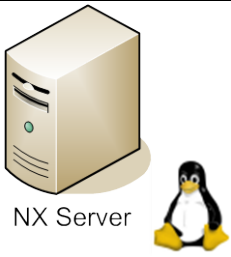
RDP Server	**MS Windows Machine (RDP Server)** **Component** / **Installed** 2X Client Gateway: No 2X Publishing Agent: No 2X Terminal Server Agent: No 2X VDS Agent: No
ICA Server	**MS Windows Machine Deploying Citrix ICA 10/11 server** **Component** / **Installed** 2X Client Gateway: No 2X Publishing Agent: No 2X Terminal Server Agent: No 2X VDS Agent: No
2X ThinClientServer	**Microsoft Windows Machine running XP, Vista, 2003, 2008, 2008 R2** **Component** / **Installed** 2X Thin Client Server: Yes 2X DHCP Helper: Yes 2X TFTP Server: Yes

Microsoft Windows Machine running XP, Vista, 2003, 2008, 2008 R2

Component	Installed
2X Client Gateway	Yes
2X Publishing Agent	Yes
2X Terminal Server Agent	Yes
2X VDS Agent	No

MS Terminal Server

Component	Installed
2X Client Gateway	No
2X Publishing Agent	No
2X Terminal Server Agent	Yes
2X VDS Agent	No

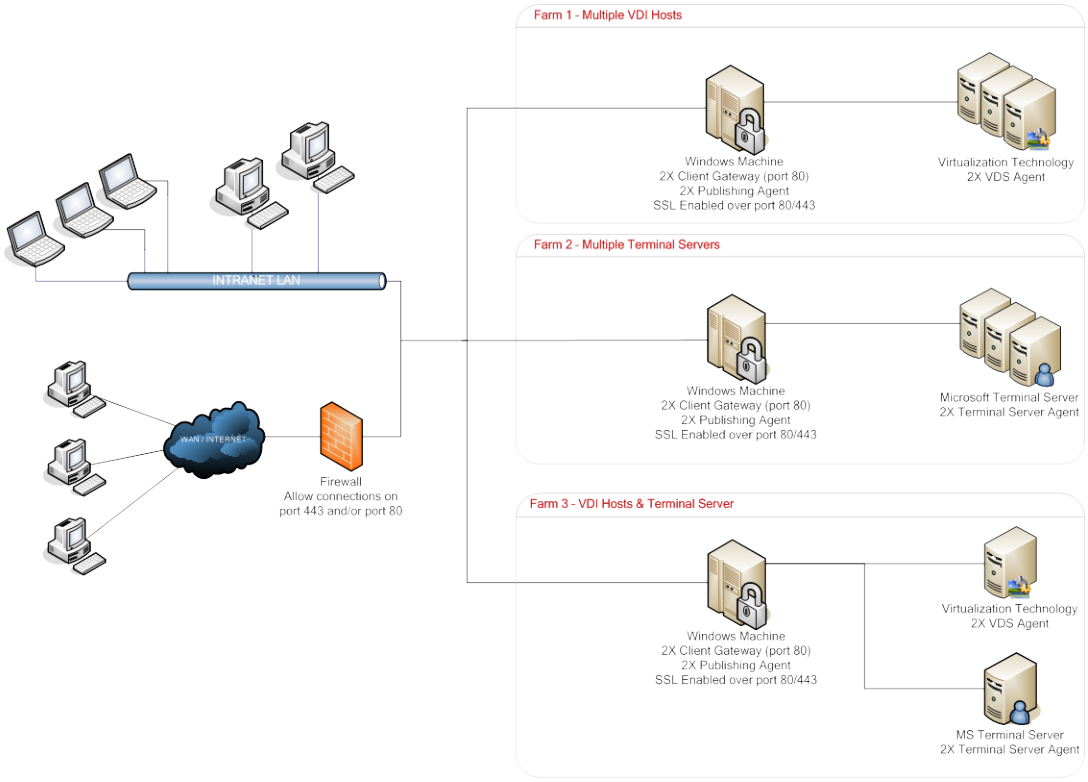


Linux Running an NX Server such as No machine

Component	Installed
2X Client Gateway	No
2X Publishing Agent	No
2X Terminal Server Agent	No
2X VDS Agent	No

Mixed scenarios

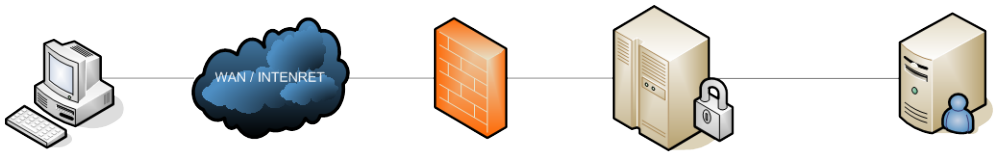
Multiple Farm Solution



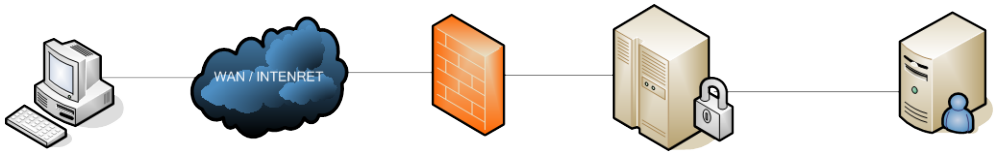
Terminology

Client Connection Modes:

SSL Mode



Regular Mode



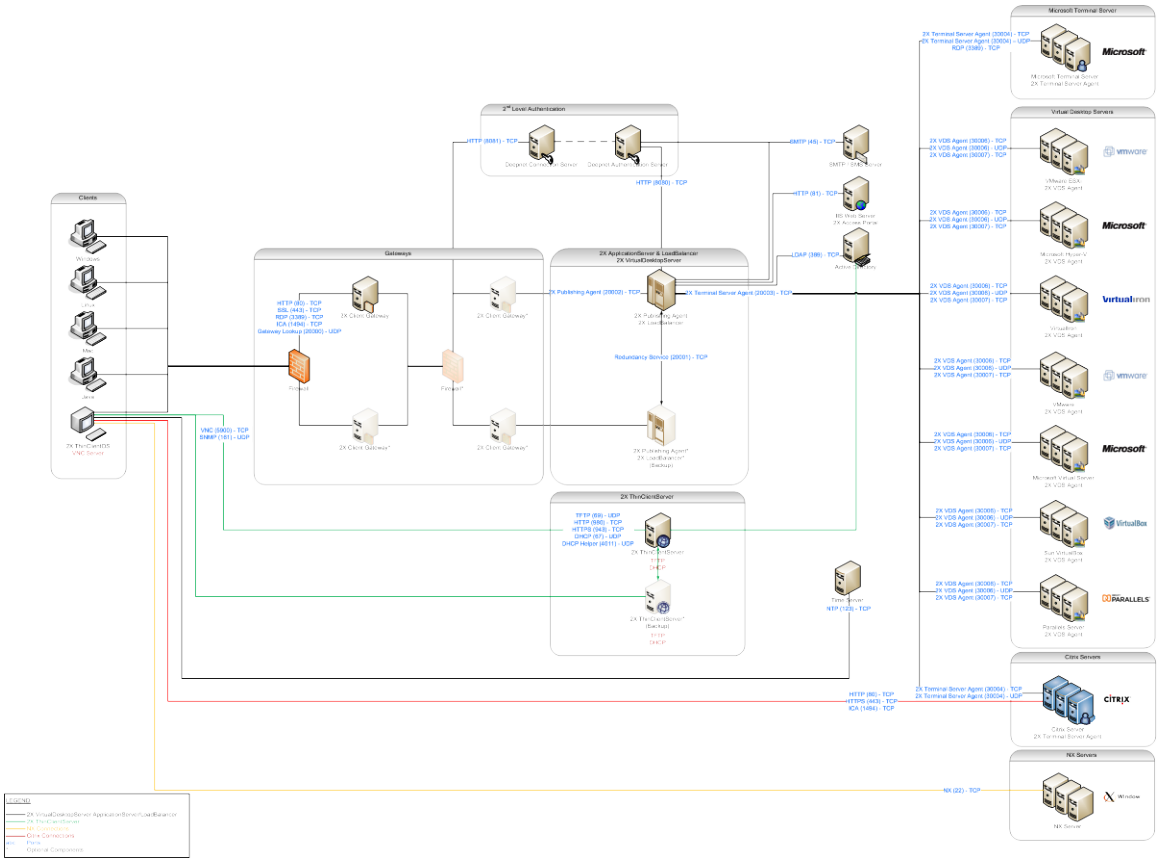
Direct Mode

When used in Regular or SSL mode, the 2X Client Gateway machine is the only machine that needs to be exposed to the outside. This greatly reduces the requirements for external IP addresses and ports that must be accessible from the outside, in case you have multiple terminal servers. In Direct mode the 2X Publishing Agent simply finds the best terminal server and passes that information back to the client and the client connects directly to the terminal server.

2X VirtualDesktopServer Components

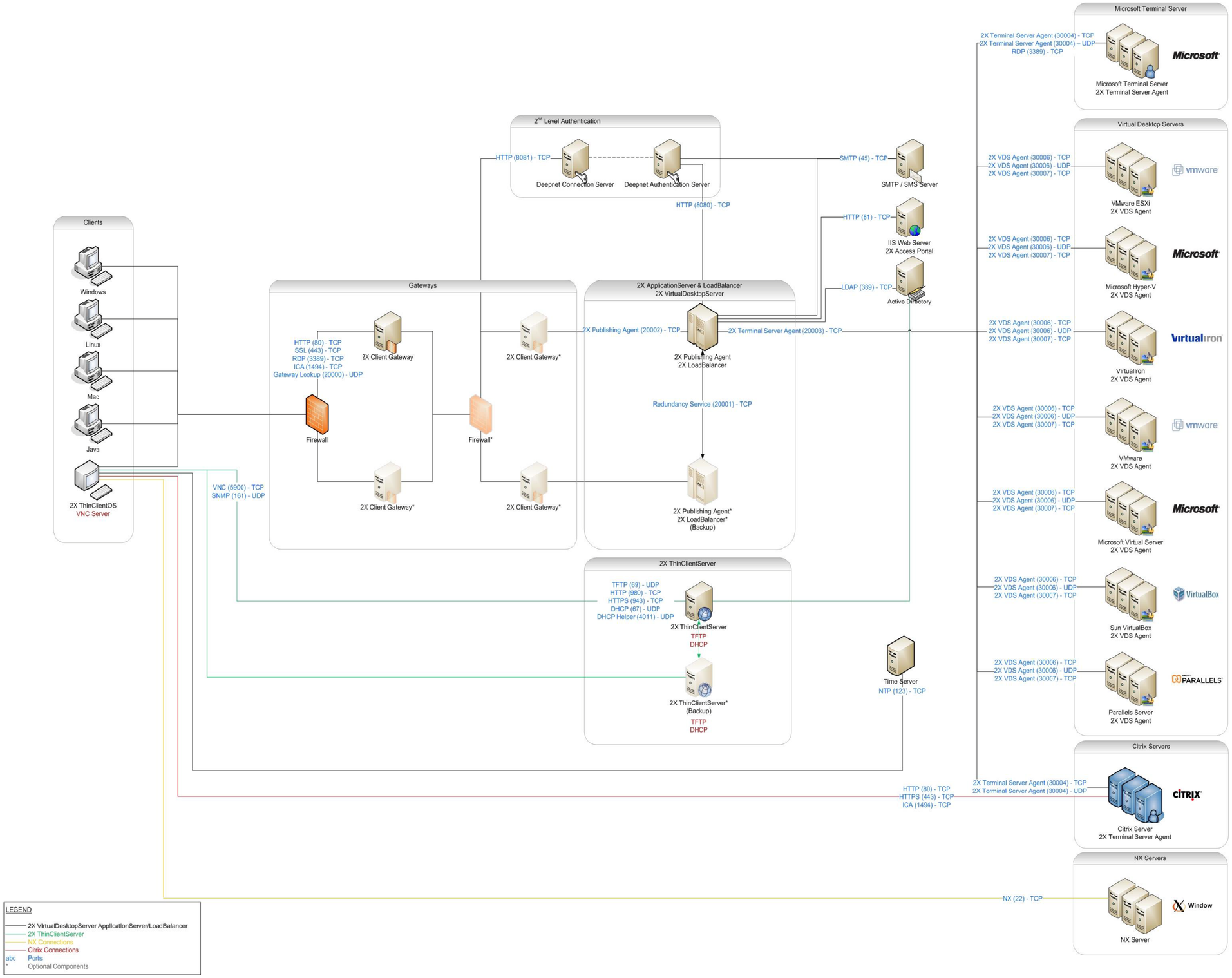
- **2X Console** - provides a centralized GUI application that allows the configuration of 2X ApplicationServer and 2X LoadBalancer.
- **2X Publishing Agent**– provides load balanced applications and desktop publishing.
- **2X Terminal Server Agent** – collects the information from the Terminal Server required by the 2X LoadBalancer and will transmit to it when required.
- **2X VDI Agent** – collects the information from the Virtual Desktop Infrastructure, and is responsible for controlling the VDI through its native API. It also acts as a Gateway between the 2X Client Gateway or the client in direct mode and the RDP server from the guest or VDI depending on the VDI implementation.
- **2X Client Gateway** - Tunnels all traffic needed by 2X applications on a single port and provides secure connections.

Port Reference



* 2X Client Gateway and 2X Publishing Agent can be installed on the same machine. If 2X Client Gateway and 2X Publishing Agent are installed on different machines make sure that 2X Client Gateway has access to the 2X Publishing Agent port (TCP 20002) otherwise it will not be able to retrieve the published applications list and load balance the application requests.

** RDP Port (3389) cannot be used if the machine on which the 2X Client Gateway is installed has terminal services enabled.


Clients
Windows
Linux
Mac
Java
2X ThinClientOS
VNC Server
Gateways
HTTP (80) - TCP
SSL (443) - TCP
RDP (3389) - TCP
ICA (1494) - TCP
Gateway Lookup (20000) - UDP
2X Client Gateway
Firewall
2X Client Gateway*
Firewall*
2X Client Gateway*
VNC (5900) - TCP
SNMP (161) - UDP
2nd Level Authentication
HTTP (8081) - TCP
Deepnet Connection Server
Deepnet Authentication Server
HTTP (8080) - TCP
2X ApplicationServer & LoadBalancer
2X VirtualDesktopServer
2X Publishing Agent (20002) - TCP
2X Terminal Server Agent (20003) - TCP
2X Publishing Agent
2X LoadBalancer
Redundancy Service (20001) - TCP
2X Publishing Agent*
2X LoadBalancer*
(Backup)
2X ThinClientServer
TFTP (69) - UDP
HTTP (980) - TCP
HTTPS (943) - TCP
DHCP (67) - UDP
DHCP Helper (4011) - UDP
2X ThinClientServer
TFTP
DHCP
2X ThinClientServer*
(Backup)
TFTP
DHCP
SMTP (45) - TCP
SMTP / SMS Server
HTTP (81) - TCP
IIS Web Server
2X Access Portal
LDAP (389) - TCP
Active Directory
Time Server
NTP (123) - TCP
HTTP (80) - TCP
HTTPS (443) - TCP
ICA (1494) - TCP
NX (22) - TCP
Microsoft Terminal Server
2X Terminal Server Agent (30004) - TCP
2X Terminal Server Agent (30004) – UDP
RDP (3389) - TCP
Microsoft
Microsoft Terminal Server
2X Terminal Server Agent
Virtual Desktop Servers
2X VDS Agent (30006) - TCP
2X VDS Agent (30006) - UDP
2X VDS Agent (30007) - TCP
vmware
VMware ESXi
2X VDS Agent
Microsoft
Microsoft Hyper-V
2X VDS Agent
VirtualIron
VirtualIron
2X VDS Agent
vmware
VMware
2X VDS Agent
Microsoft
Microsoft Virtual Server
2X VDS Agent
VirtualBox
Sun VirtualBox
2X VDS Agent
PARALLELS
Parallels Server
2X VDS Agent
Citrix Servers
2X Terminal Server Agent (30004) - TCP
2X Terminal Server Agent (30004) - UDP
CITRIX
Citrix Server
2X Terminal Server Agent
NX Servers
Window
NX Server
LEGEND
2X VIrtualDesktopServer ApplicationServer/LoadBalancer
2X ThinClientServer
NX Connections
Citrix Connections
abc Ports
* Optional Components

Appendices

Installation notes

Setting Up 2X ThinClientServer

Enterprise Edition

2X ThinClientServer Enterprise Edition provides a complete feature set for the administrator to provide thin clients with connections to the broadest range of server-based terminal services, including:

1. Windows Terminal Services
2. Linux Terminal Server
3. 2X Application Server
4. Citrix Published Applications
5. Citrix Desktop
6. VNC
7. VMware View

Enterprise Edition License holders also have access to commercial grade support via online support services.

Free Edition

2X ThinClientServer Free Edition provides a free alternative to Enterprise Edition, with all the features of the Enterprise Edition but:

- 5 Connections are allowed after the 120 days trail period.
- Support available only via our user-to-user forum.

You will require the following:

- Windows Terminal Services running on Windows Server 2003/2008/2008 R2
- Windows XP/Vista/Win7/2008/2008R2 for the TCs server itself if separate.
- 2X ThinClientServer

1. On the Windows Server, install the Terminal Services; this is done via Add/Remove programs. This will require a reboot.
2. Install 2X ThinClientServer. Note this can be on the same machine or a separate machine.
3. Configure 2X ThinClientServer as per the manual and set up a connection profile for Windows RDP.
4. Ensure any users who will be testing/using this have been granted Remote Desktop user permissions.
5. If you have DHCP configured for PXE, then PXE boot, if not, then download and burn the ISO image to CD and boot from the CD.
6. Boot and login.

All files required can be found on the 2X ThinClientServer downloads page.

Common issues

You attempt to login but you return to the login screen

- Check in the connection profile settings that the IP address or fully resolvable name is listed. Note localhost or 127.0.0.1 will fail.
- Check that RDP is enabled (If testing with Windows XP, RDP is disabled as default and must be enabled under My Computer properties)
- Try with the Windows XP or other RDP client to connect and login to verify the service works.
- Remote desktop permissions have not be granted to the user – Check the user permissions.
- Ensure the port 3389 (default) is allowed through any firewalls in between the client and Terminal Server.

When connecting to 2X AS / VDS verify with the windows client to see that that part of the system has been set up correctly.