Why Migrate from Citrix to Parallels?
On 3 March 2015, Citrix reviewed the lifecycle of XenApp and Presentation Server, confirming that the end of extended support for Windows Server 2003 will be on 24 August 2016. For businesses, the subsequent mandatory migration has the potential to cause a disruptive wholesale change in their IT environment.

However, Citrix’s end-of-life announcement also gives companies the opportunity to re-evaluate their needs and investigate the options provided by other vendors. As businesses face this rapidly approaching deadline, it is crucial to plan a migration strategy.

Patches, or “hotfixes” to use the term coined by Citrix, seem to be a common trend throughout blogs and forums. Hotfix this, hotfix that, this hotfix will not work with that OS, support doesn’t have a solution for your environment, and so on.

“Only the early adopters of XenApp 6 really know how bad it was, before the 100-plus hotfixes,” said Andrew Morgan, Solutions Architect, Novosco Ltd. (Source)

Apart from that, the upgrade and migration procedures are not as straightforward as Citrix would have us believe. With a large, complex, and interconnecting product range, Citrix makes it hard for organizations to evaluate the real cost associated with its software infrastructure.

Administrators find themselves constantly monitoring all of the Citrix products to ensure that they do not miss an update or migration of any solution. With many different End-of-Maintenance (EOM) and End-of-Life (EOL) announcements, finding out too late could cause huge problems.

To add insult to injury, IT pros are advised to upgrade Citrix solutions quickly in order to avoid extended support costs that could reach up to around €200,000 per year, depending on the size of the organization. Upgrading to unpolished software also generates its own range of costs and complexities. And let’s not forget that without XenApp Fundamentals and VDI-in-a-Box, it looks like Citrix may be turning its back on small and medium-sized businesses.

“XenApp’s change in status implies that product lifecycles are getting shorter and shorter,” said Federica Troni, Principal Analyst, Gartner Inc. “It forces users into an upgrade cycle faster than they would like.” (Source)

Although Citrix does not publish its charges for extended support programs, a Citrix spokesperson said that they work with customers on an individual basis to understand and address their needs for extended support. “One large enterprise in Europe with 2,500 XenApp platinum seats was given an approximate quote of €100,000 per six months ($121,000 or £78,310) by its support provider.” Archana Venkatraman, Datacenter Editor, TechTarget (Source)

Despite the benefits associated with new software, upgrades are hard to justify when you consider the cost, notably in departments that do not generate any revenue, such as IT. It is equally hard to justify maintaining support on an old system for up to €200,000 annually.
Anything else you should know?

Take all of that in. It can’t get worse, right? WRONG! The biggest migration challenge is whether applications running on the current Citrix solution are compatible with the newer version. There are many legacy apps out there that just won’t run on Server 2008 in 32-bit mode, let alone on Server 2008 R2 which is 64-bit only. This means that on top of the premium price you fork out to pay for the Citrix upgrade, you also pay for the newest version of office software, not to mention user training!

Also, it is important to note that while migrating to the new version of Citrix XenApp, the upgrade will have to run in parallel with the old solution. Yes, that’s right, you have to invest in new hardware to support the new system while the old system is maintained just to keep up appearances until finally being retired. This is because XenApp 6.0 and 6.5 cannot be part of a mixed farm. You cannot mix farms with versions 4.5/5.0, 6.0 and 6.5, so you have to build the systems in parallel and eventually use Web Interface to aggregate the two farms together.

Why Choose Parallels 2X Remote Application Server?

Parallels has supported many companies in the migration process from Citrix. Parallels 2X Remote Application Server (RAS) is easy to implement, provides enterprise scalability, and integrates powerful universal printing and scanning functionality.

Parallels 2X RAS is an affordable and easy-to-use alternative to Citrix. Easy to configure and install, it can be set up in less than five minutes. Parallels 2X RAS simplifies the management of your virtual infrastructure, with the flexibility to mix and match resources from all major hypervisors as well as RDS at a fraction of the cost of Citrix solutions.

With Parallels 2X RAS it is possible to mix different versions of Windows Server 2003 (2008 and 2012), avoiding the restriction of having to use only one operating system to run all operations, while retaining application compatibility. This allows organizations to migrate at their own pace.
1. Overview

This article provides a set of guidelines for migration from a Citrix solution to Parallels 2X RAS. It covers migration from the Citrix solutions below:

1. Metaframe
2. XenApp Fundamentals
3. XenApp Presentation Server

The time needed to complete these migrations depends on the complexity of the Citrix environment which Parallels 2X RAS will replace. The migration procedures described in sections 2 and 3 required 1.5 hours.

Preparation

This section of the guide contains information and resources to help improve your Parallels 2X RAS knowledge and skills. Before migrating, it is necessary to understand the performance and gain visibility of all IT tiers in the current environment, including users, applications, operating systems, virtualization, data and networks.

1.1 Technology Overview

Parallels 2X RAS comprises the components and systems of a Farm setup, represented in a graphical interface known as the 2X console. Components are listed below:

- **2X Publishing Agent** – provides load balanced applications and desktop publishing.
- **2X Redundancy Service** – provides redundancy.
- **2X Secure Client Gateway** – tunnels all traffic needed by published applications on a single port and provides secure connections.
- **2X Terminal Server Agent** – provides terminal server information to the 2X Publishing Agent.
- **2X VDI Agent** – provides virtual workstations and applications.
- **HALB** – High Availability Load Balancer – virtual load balancer for 2X Gateways.

The Farm

A farm consists of a Parallels 2X RAS installation on a site or multiple sites.
Publishing Agent

The Publishing Agent (PA) controls communication between components and systems. There can be only one active PA in a farm. The PA controls the decision algorithm for Load Balancing, Authentication, Second Level Authentication, Filtering, and other processes. Other PAs are configured as backups and take over when the Master PA fails.

Secure Client Gateway

The gateway provides clients with a connection point to Parallels 2X RAS and acts as an entry point for the connection broker for Wyse terminals. The connections can come from multiple sources, such as a Windows, Linux, Macintosh, 2X RAS Portal, Chrome app, or smartphone client.

Terminal Server Agent

The Terminal Server Agent is installed on RDS servers to provide a connection to the farm, and to allow the PA to publish applications and manage them.

VDI Host Agent

The VDI Host Agent is installed on the hypervisor host or appliance to connect the host to the farm.

Guest Agent

The guest agent allows the PA to publish and manage guest virtual machines (VMs).

PC Agent

The PC agent is used to connect physical (vs. virtual) PCs to the farm, and provide user access to those PCs.

1.2 Connection Capacity per Gateway

The Secure Client Gateway provides clients with a connection point to the Publishing Agent and subsequently to published resources. Each 2X Gateway can support:

- Up to 500 user connections in Gateway Mode non SSL.
- Up to 300 user connections in Gateway Mode SSL.

If a gateway exceeds 450 concurrent tunnelled connections, it is advisable to add more gateways. Depending on the connection mode, the client either disconnects from the gateway
and connects directly to the RDS Server (Direct Mode), or asks the gateway to open a tunnel to the Terminal Server (Gateway Mode).

**Gateway Mode non SSL**: Clients connect with the 2X Secure Client Gateway, and the session connection is tunnelled through the first available connection. This mode is ideal for servers which are only reachable via the gateway and do not require a high level of security.

**Gateway SSL Mode**: Connections are made as in the gateway mode, but connections are encrypted. This mode is ideal for servers which are only reachable via the gateway and require a high level of security.

**Direct Mode**: Clients first connect to the 2X Secure Client Gateway for the best available server, and then connect directly with that particular server. This mode can only be used when the client and the server are on the same network.

### 1.3 Supported Devices

Parallels 2X RAS supports BYOD. Virtualized resources published from Parallels 2X RAS can be accessed by a range of devices.

Applications and VMs can be delivered to users on multiple platforms for desktop and mobile devices, listed below:

- Windows XP, 7, 8/8.1, OS X 10.10 & later, and Linux desktop operating systems.
- iPhone, iPad, Android tablets and phones.
- 2X RAS Portal is IIS-based and provides access from web browsers.
- 2X HTML5 gateway provides clientless access from any device with an HTML5 browser.
- Chrome OS.
- Raspberry Pi.
- 10ZiG and IGEL thin clients.

When the 2X RAS Portal (Webportal) is installed, users can access it directly using the http://cloudportal URL in a browser window.

### 1.4 Learning Resources

The resources listed below will answer any questions you may have before proceeding to the migration procedures:

- **Parallels 2X RAS Manuals** - [http://www.2x.com/support/ras-documentation/](http://www.2x.com/support/ras-documentation/)
- **Parallels 2X RAS Support** - [http://www.2x.com/support/ras/](http://www.2x.com/support/ras/)

The diagram above is a graphical representation of a standard Citrix Metaframe and XenApp Fundamentals farm environment. Refer to this diagram when its components are mentioned in the following sections.

2.1 Preparation

It is very simple to migrate from Metaframe and XenApp Fundamentals to Parallels 2X RAS. Prior to proceeding with the migration, take note of the considerations listed below.

- Windows 2003 to 2008 R2 Servers - make sure that all servers are fully patched with all Windows updates.
Migration: Citrix to Parallels

- Parallels 2X RAS uses some of the ports that Citrix may be utilizing. By default, the Parallels 2X RAS Gateway uses port 80, and SSL uses 443. These ports can be changed from the Parallels 2X RAS console after installation, allowing both solutions to run side by side.
- Load balancing 2X Gateways and/or Webportals is possible with existing load balancer solutions. Parallels 2X RAS is also able to load balance gateways at no added cost.
- Load balancing of TS/RDS servers is a built-in feature of Parallels 2X RAS.
- It is recommended that all Citrix configurations are backed up, and if at all possible snapshots of the servers taken if they are virtual.
- Ensure that all servers are scaled properly for application delivery and VDI delivery. This may have already been done when you scaled your Citrix Farm. It is recommended that you refer to Microsoft scaling documents for TS/RDS servers.

2.2 Implications

The known implications of a migration are listed below.

- When 2X agents are pushed to TS/RDS servers, Parallels 2X RAS shares CALs on the servers with Citrix. So each session opened via 2X will also use a TS/RDS CAL.
- A reboot may be necessary on some of the servers. We recommend that you reboot before installing the software on the servers.

2.3 Migration

First decide how you want the 2X farm to be structured. Decide what 2X roles each server will house.

In Figure 1 the Citrix environment has the servers and roles listed below:

- Six 2008 R2 servers, three of which are virtual.
- Two Gateways, a Citrix License server, and two Virtual RDS/TS servers.
- Webserver running the current web interface.
- Netscaler load balancing the Citrix Gateways for both internal and remote users.
- A VMware server and a Citrix Xen server.

Figure 2 displays the Parallels 2X RAS components which the Citrix environment will house during the migration process:

- Based on CPU/memory it was determined that the Citrix license server running Windows 2008 R2 would house the primary Publishing Agent/Console.
Migration: Citrix to Parallels

- Each Citrix Gateway would house the 2X Gateway agent. This agent can be pushed from the console to the gateway.
- Each Citrix Virtual RDS/TS server would house the 2X Terminal Server Agent. This too can be pushed from the console to the server.

Next, proceed to install the Parallels 2X RAS components mentioned above according to the procedure below:

1. Download the 2X RAS MSI from the 2X download site here - http://www.2x.com/ras/downloadlinks/
2. Follow the installation guide and verify that all prerequisites are in place - http://www.2x.com/Learn/documentation/
3. If you get a port mismatch reconfigure the ports used for gateway connections. These ports can be set to any port on the server that is not in use.
4. If the environment is using SSL Certificates, the existing SSL Certificate can be converted to an Apache-based Certificate. Please follow the directions here - http://2x.helpserve.com/default_import/Knowledgebase/Article/View/105/0/convert-from-pfx-format-to-pem-format-for-ssl-certificates-imported-from-iis.
   If you would like to use SSL for your new environment you can create your SSL Certificate if needed. The certificate is Apache-based.
5. Push the Terminal Server Agents to the RDS/TS servers.
6. Create the published applications following Parallels 2X RAS documentation.
7. Install the 2X RAS Portal (Webportal) if used on the IIS server that is hosting the web interface. Make sure that you have read the documentation for all prerequisites for IIS. By default, 2X RAS Portal uses port 81 on the initial install.
8. If you decide to load balance the gateways using the Netscaler in place, please follow the directions for this process using the Netscaler guide. If you decide to replace the Netscaler, simply install our Virtual Load Balancer (HALB) and follow the instructions for configuration.
9. Test the functionality of the Parallels product. Start configuring and allow users from your current Citrix farm to test the application’s functionality using one of the 2X Client connection types.
10. Once the test is complete you can shut down and remove the Citrix components.
11. The system is now fully reliant on 2X RAS.
Figure 2. Post Citrix Metaframe and XenApp Fundamentals Migration Environment

The diagram above is a graphical representation of the post migration environment.
3. Migration Strategy for Citrix XenApp 7.0 and Higher

Figure 3. Basic Citrix XenApp 7.0 Farm

The diagram above is a graphical representation of a standard Citrix XenApp 7.0 (and higher) farm environment. Refer to this diagram when its components are mentioned in the following sections.

3.1 Preparation

Migration from Citrix XenApp 7.0 and higher is simple. Below you can find a few recommendations and some information you should know prior to the move.

- Windows 2003 to 2012 R2 Servers - make sure that all servers are fully patched with all Windows updates.
- You will need to either create new RDS/TS servers to house the applications, or remove the Citrix Agents from the servers. With Citrix XenApp 7 and higher, there cannot be Citrix Agents on the servers running the 2X Terminal Server Agent.
Migration: Citrix to Parallels

- Build a new server to host the 2X Publishing Agent. (This is the server from which the 2X RAS MSI will be installed.)
- Parallels 2X RAS uses some of the same ports that Citrix may be utilizing. By default, the Parallels 2X RAS Gateway uses port 80, and SSL uses 443. These ports can be changed from the Parallels 2X RAS console after installation, allowing both solutions to run side by side.
- Load balancing 2X Gateways and/or Webportals is possible with existing load balancer solutions. Parallels 2X RAS is also able to load balance gateways at no added cost.
- Load balancing of TS/RDS servers is a built-in feature of Parallels 2X RAS.
- It is recommended that all Citrix configurations are backed up, and if at all possible snapshots of the servers taken if they are virtual.
- Ensure that all servers are scaled properly for application delivery and VDI delivery. This may have already been done when you scaled your Citrix Farm. It is recommended that you refer to Microsoft scaling documents for TS/RDS servers.

3.2 Implications

The known implications of a migration are listed below.

- A reboot may be necessary on some of the servers. We recommend that you reboot prior to installing the software on the servers.
- Ensure you have read the installation guide for Parallels 2X RAS (http://www.2x.com/learn/documentation/).

3.3 Migration

Decide how you want the 2X farm to be structured. Decide what 2X roles each server will house.

In Figure 3, the Citrix environment has the servers and roles listed below:

- Six 2008 R2 Servers, three of which are virtual.
- Two Gateways, a Citrix License server, and two Virtual RDS/TS servers.
- Webserver running the current web interface.
- Netscaler load balancing the Citrix Gateways for both internal and remote users.
- A VMware server and a Citrix Xen Server.

Figure 4 displays the Parallels 2X RAS components which the Citrix environment will house during the migration process:
Migration: Citrix to Parallels

- On the new server built for the 2X Publishing Agent, download and install the 2X RAS MSI.
- Three new Virtual Servers: one 2X Publishing Agent and two new, virtual 2X Terminal Servers.
- Each Citrix Gateway server will house the 2X Gateway. This agent can be pushed from the console to the gateway.
- Each new RDS/TS server will house the 2X Terminal Server Agent. This too can be pushed from the console to the server.

Next, proceed to install the Parallels 2X RAS components mentioned above, following the procedure below:

1. Download the 2X RAS MSI from the 2X download site and install the MSI on the new Publishing server. Make sure you follow the 2X RAS Documentation - [http://www.2x.com/Learn/documentation/](http://www.2x.com/Learn/documentation/)
2. Follow the installation guide and verify that all prerequisites are in place. 2X RAS Documentation - [http://www.2x.com/Learn/documentation/](http://www.2x.com/Learn/documentation/)
3. Push the 2X Gateways to the existing Citrix Gateway servers. If you get a port mismatch, reconfigure the ports that you will use for the gateway connections. You can use any port on the server that is not already in use.
4. If the environment is using SSL Certificates, the existing SSL Certificate can be converted into an Apache-based Certificate. Please follow the directions here - [http://2x.helpserve.com/default_import/Knowledgebase/Article/View/105/0/convert-from-pfx-format-to-pem-format-for-ssl-certificates-imported-from-iis](http://2x.helpserve.com/default_import/Knowledgebase/Article/View/105/0/convert-from-pfx-format-to-pem-format-for-ssl-certificates-imported-from-iis). If you would like to use SSL for your new environment, you can create your SSL Certificate if needed. The certificate is Apache-based.
5. Push the Terminal Server Agents to the RDS/TS servers.
6. Create the published applications following Parallels 2X RAS documentation.
7. Install the 2X RAS Portal (Webportal) if used on the IIS server that is hosting the web interface. Make sure that you have read the relevant documentation for IIS prerequisites. By default, the 2X RAS Portal (Webportal) uses port 81 on the initial install.
8. If you decide to load balance the gateways using the Netscaler already in place, please follow the directions for this process using the Netscaler guide. If you decide to replace the Netscaler, simply install our Virtual Load Balancer (HALB) and follow the instructions for configuration.
9. Test the functionality of the Parallels product. Start configuring and allow users from your current Citrix farm to test the application’s functionality using one of the 2X Client connection types.
10. Once the test is complete, you can shut down and remove the Citrix Components.
11. The system is now fully reliant on 2X RAS.
The diagram above is a graphical representation of the post migration environment.