



# Citrix ADC BLX 13.1

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## Overview and architecture

October 19, 2020

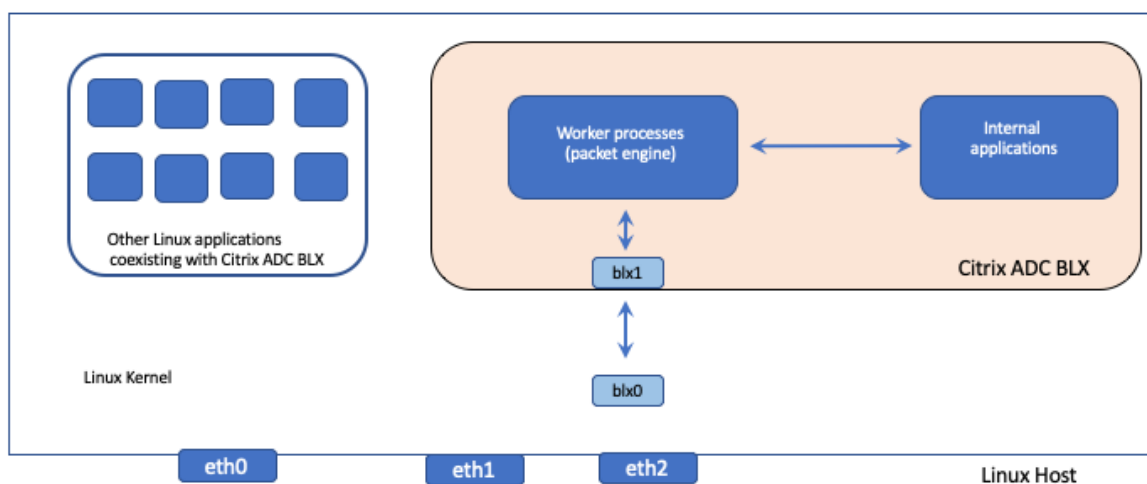
Citrix ADC BLX appliance is a software form-factor of Citrix ADC. It is designed to run natively on bare-metal-Linux on commercial off the shelf servers (COTS).

Following are the benefits of using a Citrix ADC BLX appliance:

- **Cloud-ready.** Citrix ADC BLX provides day-zero support for running on cloud.  
Citrix ADC BLX appliances do not require any certifications to run on cloud because they run as a software application on Linux virtual machines provisioned on the cloud.
- **Easy-management.** Standard tools available as part of the Linux operating system can be used to easily monitor and manage Citrix ADC BLX appliances. Citrix ADC BLX appliances can be easily plugged with an existing orchestration setup.
- **Seamless third-party tools integration.** Open source tools (for example, monitoring, debugging, and logging) supported for Linux environments can be seamlessly integrated with Citrix ADC BLX appliances. There is no need to develop separate plug-ins for each integration.
- **Coexistence of other applications.** Because Citrix ADC BLX appliances run as a software application, other Linux applications can also run on the same host.
- **DPDK support.** Citrix ADC BLX appliance supports Data Plane Development Kit (DPDK) integration for better performance. A Citrix ADC BLX appliance uses the DPDK open source library to improve performance, and overcomes the Linux kernel bottleneck in packet processing.

### General architecture

Citrix ADC BLX appliance is a software form-factor of Citrix ADC, and provides the same functionality as of a traditional Citrix ADC appliance. A Citrix ADC BLX appliance runs as a user space application in a Linux system. The BLX appliance uses the Linux drivers for Rx/Tx of packets and managing the NIC ports. Virtual interfaces `blx0` and `blx1`, which are created during the Citrix ADC BLX boot up phase, are used for communication between the kernel and the BLX appliance.



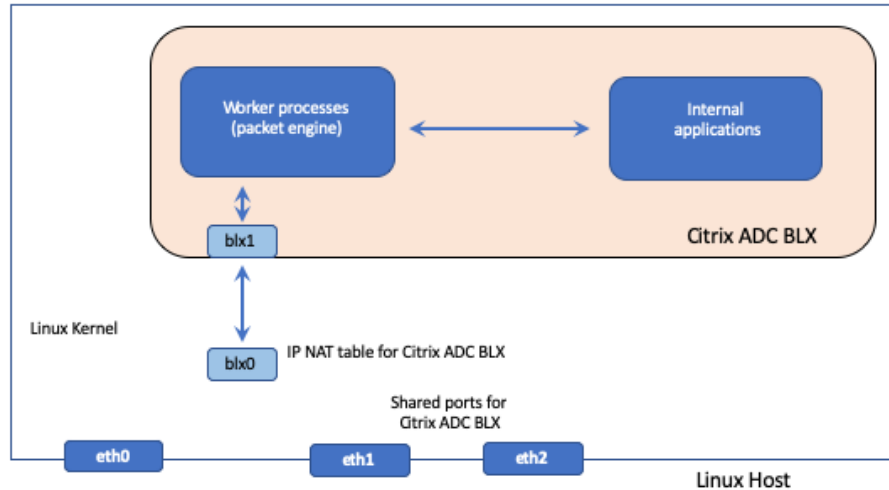
## Network modes

Network mode of a Citrix ADC BLX appliance defines whether the NIC ports of the Linux host are shared or not shared with other Linux applications running on the host. A Citrix ADC BLX appliance can be configured to run on one of the following network modes:

- Shared mode
- Dedicated mode

### Shared mode

A Citrix ADC BLX appliance configured to run in shared mode, shares the Linux host NIC ports with other Linux applications.



A Citrix ADC BLX appliance in shared mode is auto-assigned the network address of 192.0.0.1/24.

A Citrix ADC BLX appliance in shared mode operates with one single IP address that is used for management and data traffic. All the Citrix ADC owned IP addresses (for example, NSIP, SNIP, and VIP) have the same IP address of 192.0.0.1 but with different port numbers. In other words, this single IP address (192.0.0.1) uses different port numbers to function as the NSIP, SNIP, and VIPs.

Because the Linux NIC ports are shared between the BLX appliance and other Linux applications, an IP NAT table is added in the kernel for the BLX appliance. The Linux host uses this IP NAT table to recognize packets received on the Linux NIC ports belonging to the Citrix ADC BLX appliance.

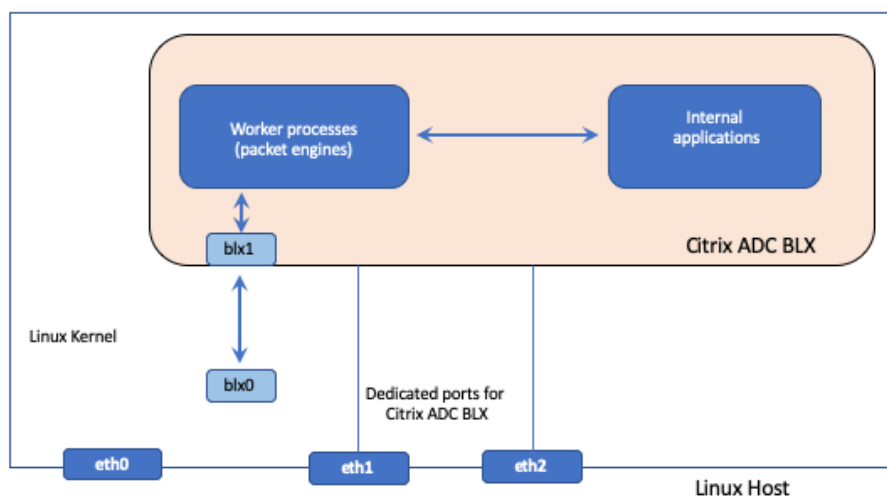
The Linux host then performs NAT by translating the destination IP address of the received packet to the IP address (192.0.0.1) of the Citrix ADC BLX appliance. The Citrix ADC BLX appliance receives the packets through `blx0` and `blx1` virtual interfaces (`veth`).

The Citrix ADC BLX appliance processes the received packets and sends them to Linux kernel through `blx1` and `blx0` virtual interfaces. The Linux host performs NAT on these packets using the BLX IP NAT table, and then sends them out to the destination through the Linux NIC ports.

### Dedicated mode

A Citrix ADC BLX appliance configured in dedicated mode has dedicated Linux host NIC ports and it does not share the ports with other Linux applications.

Other Linux applications on the host do not see the Linux NIC ports dedicated to the Citrix ADC BLX appliance.



The IP addressing scheme on a Citrix ADC BLX appliance in dedicated mode is similar to that of on a traditional Citrix ADC appliance. On a Citrix ADC BLX appliance in dedicated mode, ADC owned IP addresses (for example, NSIP, SNIP, and VIPs) can have different IP addresses.

Unlike in shared mode, there is no NAT operation required for the Citrix ADC BLX appliance in dedicated mode. The Citrix ADC BLX appliance receives/responds packets directly from/to the external network device through the configured dedicated Linux NIC ports.

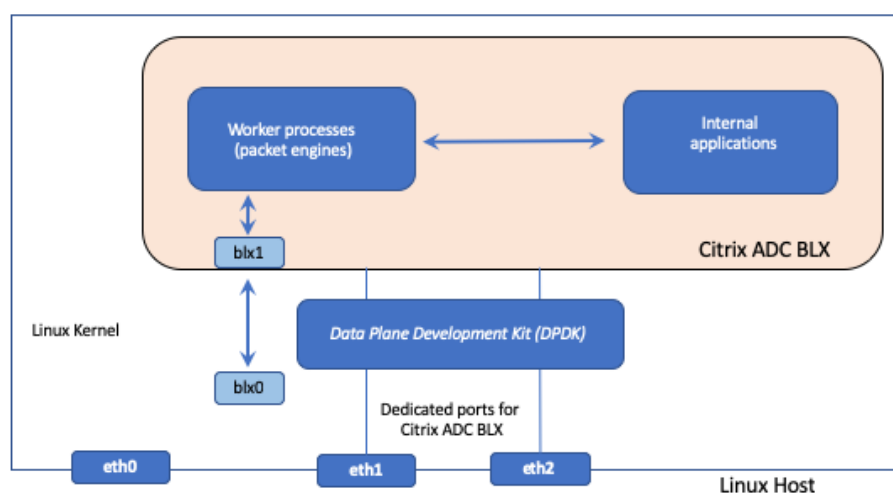
The Citrix ADC BLX appliance in dedicated mode still uses `blx0` and `blx1` virtual interfaces (`veths`) to send SYSLOG and other management related information to the Linux kernel.

### Citrix ADC BLX appliance with Data Plane Development Kit (DPDK) support

A Citrix BLX appliance uses the traditional Linux drivers for Rx/Tx of packets and managing the NIC ports. The packets transmitted between the Linux kernel and the BLX appliance in the user space using the Linux drivers has several overheads. These overheads affect the performance of the BLX appliance.

The Citrix ADC BLX appliance has a full TCP/IP stack to process any packet. If the BLX appliance has a speedy way of receiving packet from underlying Linux NIC ports then the network performance is improved.

Data Plane Development Kit (DPDK) can be used to overcome this bottleneck. DPDK is a set of open source Linux libraries and network interface controllers used for better network performance. For more information on DPDK, see the official DPDK website at <https://www.dpdk.org/>



DPDK helps in bypassing the kernel and directly delivers the packets into the user space application for further processing. DPDK, in combined with Linux UIO module, helps the Citrix ADC BLX appliance to receive/transmit packet from/to the Linux NIC ports without involving the Linux kernel overhead of packet processing. Once memory is allocated, DPDK manages its own buffer to achieve better performance.

A Citrix ADC BLX Appliance with DPDK support works only in dedicated network mode.

## Supported ADC features

November 23, 2021

Citrix ADC BLX appliances support the following Citrix ADC features:

- Load balancing
- SSL Offloading
- Content switching
- Web logging
- Rewrite
- Responder
- AppFlow
- DNS
- Authentication, authorization, and auditing application traffic
- Web application firewall

- Log streaming
- IPv6
- DSR
- High availability
- Dynamic routing protocols:
  - IPv4 and IPv6 BGP
  - IPv4 OSPF (OSPFv2)
  - IPv6 OSPF (OSPFv3)
- SNMP (Not supported for shared mode NIC interfaces)
- LA and LACP channels (Not supported for shared NIC interfaces, supported only between dedicated NIC interfaces or only between DPDK NIC interfaces.)
- Global server load balancing
- Cluster
- Metrics collector

## Citrix ADC BLX licensing

February 28, 2022

Licensing a Citrix ADC BLX appliance expands the capability and performance of the appliance. By default, a Citrix ADC BLX appliance comes with an express license. You can upgrade an express license to a subscription-based local license that has a term date, or to a Citrix ADC pooled capacity license stored in a Citrix ADM appliance.

### Citrix ADC BLX Express license

By default, all Citrix ADC BLX appliances come with an express license. A Citrix ADC BLX with an express license has the following features:

- 20 Mbps bandwidth
- All standard edition Citrix ADC features that are supported for Citrix ADC BLX appliances
- Maximum 250 SSL sessions
- 20 Mbps SSL throughput

Expand the capability and performance of a Citrix ADC BLX appliance running with an express license by upgrading the license to one of the following options:

- A subscription-based local license
- A Citrix ADC pooled capacity license in Citrix ADM. For more information, see [Citrix ADC Pooled Capacity](#).



## Subscription-based local licenses for Citrix ADC BLX appliances

A Local license is similar to a perpetual license however they have an expiration date. The software subscription that makes up local licenses are term-based and can be installed without requiring ADM as a licensing server.

The following type of subscription local licenses is available for Citrix ADC BLX appliances:

- **Bandwidth-based subscription-based local license.** This type of license is enforced with a maximum allowed throughput that a particular Citrix ADC BLX appliance is entitled to.

Each local license is also tied up with one of the Citrix ADC software editions: Standard, Enterprise, or Platinum, which unlocks the ADC feature set of this edition in a Citrix ADC BLX appliance. Embedded Select support is included with the subscription local license purchase.

### Example:

A **Citrix ADC BLX Subscription 10 Gbps Premium Edition** entitles a Citrix ADC BLX appliance with a maximum allowed throughput of 10 Gbps. This license also unlocks all the ADC features, listed in the Premium edition, in the Citrix ADC BLX appliance.

The following table lists the bandwidth-based subscription-based local licenses available for Citrix ADC BLX appliances:

Bandwidth-based local licenses	Maximum bandwidth supported
Citrix ADC VPX/BLX Subscription 10 Mbps – Standard, Advanced, Premium Edition	10 Mbps
Citrix ADC VPX/BLX Subscription 25 Mbps – Standard, Advanced, Premium Edition	25 Mbps
Citrix ADC VPX/BLX Subscription 200 Mbps – Standard, Advanced, Premium Edition	200 Mbps
Citrix ADC VPX/BLX Subscription 1 Gbps – Standard, Advanced, Premium Edition	1 Gbps
Citrix ADC VPX/BLX Subscription 3 Gbps – Standard, Advanced, Premium Edition	3 Gbps
Citrix ADC VPX/BLX Subscription 5 Gbps – Standard, Advanced, Premium Edition	5 Gbps
Citrix ADC VPX/BLX Subscription 8 Gbps – Standard, Advanced, Premium Edition	8 Gbps
Citrix ADC VPX/BLX Subscription 10 Gbps – Standard, Advanced, Premium Edition	10 Gbps

Bandwidth-based local licenses	Maximum bandwidth supported
Citrix ADC VPX/BLX Subscription 15 Gbps – Standard, Advanced, Premium Edition	15 Gbps
Citrix ADC VPX/BLX Subscription 25 Gbps – Standard, Advanced, Premium Edition	25 Gbps
Citrix ADC VPX/BLX Subscription 40 Gbps – Standard, Advanced, Premium Edition	40 Gbps
Citrix ADC VPX/BLX Subscription 100 Gbps – Standard, Advanced, Premium Edition	100 Gbps

## Deploy a Citrix ADC BLX appliance

August 26, 2022

Deploying a Citrix ADC BLX appliance on a Linux host consists of first downloading and installing the Citrix ADC BLX appliance. Then, the installed Citrix ADC BLX appliance can be deployed either with or without DPDK support. A Citrix ADC BLX appliance can be configured in either shared or dedicated network mode. A Citrix ADC BLX appliance with DPDK support can be configured only in dedicated mode.

### Before you Begin

Before you start deploying a Citrix ADC BLX appliance on a Linux host, the following table lists the pre-requisites and consideration points:

Category	Citrix ADC BLX appliance	Citrix ADC BLX appliance with DPDK support
<b>Supported Linux operating system</b>	Red Hat Enterprise Linux (RHEL) releases 7.5 to 7.9, and 8.x	Red Hat Enterprise Linux (RHEL) releases 7.5 to 7.9, and 8.x
”	CentOS releases 7.5 to 7.9, and 8.x	CentOS releases 7.5 to 7.9, and 8.x
”	Oracle Linux releases 7.4 to 7.9, and 8.x	Oracle Linux releases 7.5 to 7.9, and 8.x
”	Ubuntu releases 18.04 and 20.04	Ubuntu releases 18.04 and 20.04

Category	Citrix ADC BLX appliance	Citrix ADC BLX appliance with DPDK support
”	Linux on Oracle Cloud Infrastructure (OCI)	-
”	Amazon Linux 2 on AWS cloud	Amazon Linux 2 with Elastic Network Adapter (ENA) support on AWS cloud
<b>Processor type on the Unix host</b>	Intel or AMD x86-64 (64-bit) processor	Intel x86-64 (64-bit) processor
<b>Minimum RAM on the Linux Host</b>	2 GB RAM	See the next row <b>DPDK related requirements and information.</b>
<b>DPDK related requirement and Information</b>	NA	The Linux host must meet the minimum system requirements for installing DPDK. For more information about the minimum requirements, see the <a href="#">Official DPDK Documentation</a> .
”	”	The Citrix ADC BLX appliance uses libraries compiled with <b>DPDK version 20.11.1</b> .
”	”	Citrix recommends that the Linux host has at least 2GB memory available that can be allocated as huge pages by the Citrix ADC BLX appliance for DPDK.
”	”	For a list of limitations on a Citrix ADC BLX appliance in DPDK mode, see <a href="#">Citrix ADC BLX limitations and usage guidelines</a> .

Category	Citrix ADC BLX appliance	Citrix ADC BLX appliance with DPDK support
<b>Install Extra Packages for Enterprise Linux (EPEL) repository applicable for Redhat based Linux systems</b>	Run the following command on the Linux shell to install the package: <code>rpm -ivh epel-release-latest-7.noarch.rpm</code> . For more information about installing the EPEL repository, see <a href="#">EPEL</a> .	Run the following command on the Linux shell to install the package: <code>rpm -ivh epel-release-latest-7.noarch.rpm</code> . For more information about installing the EPEL repository, see <a href="#">EPEL</a> .
<b>Install EPEL repository applicable for Amazon Linux 2 on AWS</b>	Run the following three commands on the Amazon Linux 2 shell to install EPEL repository: 1. <code>amazon-linux-extras install epel -y</code> 2. <code>yum-config-manager --enable epel</code> 3. <code>yum update</code> . For more information about installing EPEL repository on Amazon Linux 2, see the <a href="#">Amazon AWS official documentation</a> .	Run the following three commands on the Amazon Linux 2 shell to install EPEL repository: 1. <code>amazon-linux-extras install epel -y</code> 2. <code>yum-config-manager --enable epel</code> 3. <code>yum update</code> . For more information about installing EPEL repository on Amazon Linux 2, see the <a href="#">Amazon AWS official documentation</a> .

**Note:**

- A Citrix ADC BLX appliance deployed on CentOS Linux version 8.0 host or Oracle Linux version 8.0 host might not start or function properly if the following condition is met:
  - `SELinux` policy is enabled on the Linux host. SELinux prevents the `systemd` process from running some Citrix ADC BLX system files.

Workaround: Disable `SELinux` on the Linux host.

- A Citrix ADC BLX appliance supports a maximum of nine NIC ports (DPDK NIC ports, or non-DPDK NIC ports, or both).

## Download and install a Citrix ADC BLX package on the Linux host

February 22, 2022

Citrix ADC BLX installation packages are hosted on the official Citrix ADC BLX downloads page. A Citrix ADC BLX installation package bundles Citrix ADC feature packages including a package with DPDK support. A Citrix ADC BLX installation package is a TAR file and has the following name format:

```
blx-<release number>-<build-number>.tgz
```

### Example:

```
blx-13.1-17.42.tgz
```

### To download a Citrix ADC BLX installation package:

1. Access the official [Citrix ADC BLX downloads](#) page.
2. Navigate to the desired **Citrix ADC Release > Citrix ADC BLX image build** page.
3. Download the Citrix ADC BLX installation package to the Linux host.

### To install a Citrix ADC BLX appliance on the Linux host:

1. Untar the Citrix ADC BLX installation package and then change the working directory to the extracted Citrix ADC BLX installation directory:

```
1 tar -xvf blx-<release number>-<build-number>.tgz
2
3 cd <path to the extracted Citrix ADC BLX installation directory>
4 <!--NeedCopy-->
```

### Sample output:

The following sample output shows that a Citrix ADC BLX installation package `blx-13.1-17.42.tgz`, which is already downloaded to the `/var/blxinstall` directory of a Linux host, is untared. Then, the working directory is changed to the extracted directory `blx-13.1-17.42`.

```
1 > cd /var/blxinstall
2
3 > tar -xvf blx-13.1-17.42.tgz
4
5 > cd blx-13.1-17.42
6
```

```
7 > pwd
8 /var/blxinstall/blx-13.1-17.42
9
10 <!--NeedCopy-->
```

2. Install a Citrix ADC BLX appliance on a Red Hat enterprise Linux (RHEL) host or Debian based Linux host.

- Run the following command on a Red Hat enterprise Linux (RHEL) host:

```
1 yum install ./blx*.rpm
2 <!--NeedCopy-->
```

- Run the following command on a Debian based Linux host:

```
1 apt install ./blx*.deb
2 <!--NeedCopy-->
```

**Note:**

By default, the Citrix ADC BLX appliance is in **Down** state.

3. Check the status of the Citrix ADC BLX appliance by running the following command:

```
1 systemctl status blx
2 <!--NeedCopy-->
```

## Configure a Citrix ADC BLX appliance with a network mode

March 25, 2022

Network mode of a Citrix ADC BLX appliance defines whether the NIC ports of the Linux host are shared or not shared with other Linux applications running on the host. A Citrix ADC BLX appliance can be configured to run on one of the following network modes:

- Shared network mode
- Dedicated network mode

A configuration file named BLX configuration file (`blx.conf`) is added to the Linux host as part of the Citrix ADC BLX installation. The BLX configuration file contains parameter settings for the Citrix ADC BLX appliance.

By default, all the parameters are prefixed with a `##` symbol in the BLX configuration file. You can set a parameter with a custom value and enable the setting by removing the `##` prefix.

All the parameters in BLX configuration file (`blx.conf`) are either generic or specific to the shared or dedicated network modes.

## Configure a Citrix ADC BLX appliance in shared mode

A Citrix ADC BLX appliance configured in shared mode shares the Linux host NIC ports with the other applications running on the host. A Citrix ADC BLX appliance is configured to run in shared network mode if the `interfaces` parameter remains disabled (prefixed by `##`) in BLX configuration file (`blx.conf`).

All the parameters relevant to the shared mode in the BLX configuration file are not mandatory and are prefixed with `##`.

You can set these parameters to a custom value and enable the custom setting by removing the `##` prefix.

For example, you can set the following optional parameter in the BLX configuration file for the Citrix ADC BLX appliance.

- **worker-processes.** Specifies the number of packet engines for a Citrix ADC BLX appliance. If this parameter is not set, the Citrix ADC BLX appliance is configured with one packet engine by default. Default: 1, Maximum: 28.

After setting the optional parameters, start the appliance by following the instructions at [Start the Citrix ADC BLX appliance](#).

After successfully deploying a Citrix ADC BLX appliance, access and configure ADC features on the appliance by using one of the following access interfaces of the appliance:

- Citrix ADC CLI
- Citrix ADC GUI
- Citrix NITRO REST APIs

For more information about using these access interfaces, see [Access a Citrix ADC BLX appliance and configure ADC features](#).

All the access interfaces of a Citrix ADC BLX appliance in a shared mode are available on any Linux host IP address and a specific IP port.

The following table lists the default IP addresses and port on which an access interface is available for a Citrix ADC BLX appliance in shared mode.

Access interface	Access protocol	default access IP address and port
Citrix ADC CLI	SSH	<Any Linux host IP address>:9022
Citrix ADC GUI	HTTP	<Any Linux host IP address>:9080
Citrix ADC GUI	HTTPS	<Any Linux host IP address>:9443
Citrix NITRO REST APIs	HTTP	<Any Linux host IP address>:9080
Citrix NITRO REST APIs	HTTPS	<Any Linux host IP address>:9443

The BLX configuration file contains shared mode specific parameters to change the default IP port for the access interfaces. For more information see, [Access a Citrix ADC BLX appliance and configure ADC features](#).

## Configure a Citrix ADC BLX appliance in dedicated mode

A Citrix ADC BLX appliance configured in dedicated mode has dedicated Linux host NIC ports.

You can configure a Citrix ADC BLX appliance to be in dedicated mode by specifying the `interfaces` parameter with one or more Linux host NIC ports in the BLX configuration file (`blx.conf`). The specified ports are added as dedicated ports to the Citrix ADC BLX appliance. Also, you must add a management IP address and a default route for the Citrix ADC BLX appliance by setting the `ipaddress` and `default` parameters.

### To configure a Citrix ADC BLX appliance in dedicated mode:

1. Open the Citrix ADC BLX configuration file (`blx.conf`) present in the Linux host. The complete path of the Citrix ADC BLX configuration file is: `/etc/blx/blx.conf`
2. Uncomment and set the following parameters:
  - **worker-processes**. Specifies the number of packet engines for a Citrix ADC BLX appliance. If this parameter is not set, the Citrix ADC BLX appliance is configured with one packet engine by default. Default: 1, Maximum: 28.
  - **interfaces**. Specifies the Linux host NIC ports to be added as dedicated ports to the Citrix ADC BLX appliance. This parameter specifies the port names (as shown on the Linux CLI) separated by space.



- **ipaddress.** Specifies the management IP address for the Citrix ADC BLX appliance in dedicated mode. The management IP address of the Citrix ADC BLX appliance is also called the Citrix ADC IP (NSIP) address. A Citrix ADC BLX appliance can have only one Citrix ADC IP (NSIP) address. Also, you must add a default route for the configured Citrix ADC IP subnet so that the Citrix ADC IP becomes reachable from other networks on the LAN.
- **default.** Specifies the default route for the dedicated ports of the Citrix ADC BLX appliance.

3. Save the Citrix ADC BLX configuration file (`blx.conf`).

After setting the parameters, start the appliance by following the instructions at [Start the Citrix ADC BLX appliance](#).

After successfully deploying a Citrix ADC BLX appliance, access and configure ADC features on the appliance by using one of the following access interfaces of the appliance:

- Citrix ADC CLI
- Citrix ADC GUI
- Citrix NITRO REST APIs

For more information about using these access interfaces, see [Access a Citrix ADC BLX appliance and configure ADC features](#).

All the access interfaces of a Citrix ADC BLX appliance in a dedicated mode are available on the Citrix ADC IP (NSIP) and a specific IP port.

The following table lists the Citrix ADC IP (NSIP) and IP port on which an access interface is available for a Citrix ADC BLX appliance in dedicated mode.

Access interface	Access protocol	default access IP address and port
Citrix ADC CLI	SSH	<Citrix ADC IP address (NSIP)>:22
Citrix ADC GUI	HTTP	<Citrix ADC IP address (NSIP)>:80
Citrix ADC GUI	HTTPS	<Citrix ADC IP address (NSIP)>:443
Citrix NITRO REST APIs	HTTP	<Citrix ADC IP address (NSIP)>:80
Citrix NITRO REST APIs	HTTPS	<Citrix ADC IP address (NSIP)>:443

Citrix ADC BLX appliance provides command operations for changing the default IP port for the access

interfaces. For more information see, [Access a Citrix ADC BLX appliance and configure ADC features](#).

### Sample configuration - Citrix ADC BLX appliance in dedicated mode

In the following sample excerpt of a `blx.conf` file, Linux NIC ports `ens1` and `ens2` are specified to the `interfaces` parameter. `Worker-processes` is set to 6, setting 6 packet engines for the appliance. `ipaddress` is set to 198.51.100.10. `ipaddress` defines the Citrix ADC IP address (NSIP). `default` parameter is set to 198.51.100.1.

After starting the Citrix ADC BLX appliance, `ens1` and `ens2` are added as dedicated ports to the appliance. The Citrix ADC IP address (NSIP) is set to 198.51.100.10 with a default route of 198.51.100.1.

```
1 blx-system-config
2 {
3
4 ...
5     worker-processes: 6
6 ...
7     interfaces: ens1 ens2
8 ...
9     ipaddress: 198.51.100.10/24
10 ...
11 }
12
13
14 ...
15
16 static-routes
17 {
18
19 ...
20     default 198.51.100.1
21 ...
22 }
23
24 ...
25
26 <!--NeedCopy-->
```

As shown in the following output of `show interface summary` operation in the Citrix ADC BLX CLI, `ens1` is added as 0/3 and `ens2` is added as 0/4 interfaces on the appliance.

```

1 > sh interface summary
2 -----
3      Interface  MTU      MAC              Suffix
4 -----
5 1      0/1      65535      f6:d5:34:f7:e4:96  NetScaler Linux
6      Interface
7 2      0/2      1500      ee:14:18:4a:5b:92  NetScaler Linux
8      Interface
9 3      0/3      1500      2a:ca:db:ee:66:91  NetScaler Linux
10     Interface
11 4      0/4      1500      2a:ca:d2:ef:5a:90  NetScaler Linux
12     Interface
13
14 Done
15 <!--NeedCopy-->

```

## Configure a Citrix ADC BLX appliance with DPDK support

June 8, 2022

Citrix ADC BLX appliances support Data Plane Development Kit (DPDK), which is a set of Linux libraries and network interface controllers for better network performance. A Citrix ADC BLX appliance with DPDK ports works only in dedicated network mode.

The Citrix ADC BLX appliance uses libraries compiled with **DPDK version 20.11.1**.

### Configure a Citrix ADC BLX appliance with DPDK ports

A Citrix ADC BLX automatically loads the DPDK VFIO kernel module on the Linux host. The appliance automatically detects the specified DPDK compatible NIC ports on the Linux host. The appliance then binds the detected DPDK compatible NIC ports to the DPDK VFIO module on the Linux host. After starting the Citrix ADC BLX appliance, the DPDK ports are added as dedicated ports to the appliance.

#### Before you Begin

Before you start configuring the Citrix ADC BLX appliance with DPDK ports, make sure that:

- You have set the required parameters in the Citrix ADC BLX configuration file (blx.conf) as mentioned in [Configure a Citrix ADC BLX appliance in dedicated mode](#).

- You have read [Limitations specific to a Citrix ADC BLX appliance with DPDK support](#).

### Enable IOMMU support on the Linux host

The Input-Output Memory Management Unit (IOMMU) support must be enabled on the Linux host for the kernel to use the VFIO module for DPDK.

#### To enable IOMMU support on the Linux host:

1. Enable the IOMMU extension in the BIOS of the Linux host. For more information, see the related **hardware documentation** of the Linux host.
2. Enable IOMMU mode in the kernel by editing the `grub` configuration file in the Linux host.
  - a) Open the `grub` configuration file in the Linux host. The complete path of the `grub` configuration file is: `/etc/default/grub`.
  - b) Append `intel_iommu=on` to the end of the `GRUB_CMDLINE_LINUX` line.

```
1 # vi /etc/default/grub
2
3 ...
4
5 GRUB_CMDLINE_LINUX="nofb splash=quiet console=tty0 ...
   intel_iommu=on"
6
7 ...
8 <!--NeedCopy-->
```

- c) Save the `grub` configuration file.
- d) Update the `grub` boot loader by running one of the following commands (on the Linux CLI) based on the version of `grub` installed on the Linux host.
  - `grub2-mkconfig -o /boot/grub2/grub.cfg`
  - `grub-mkconfig -o /boot/grub/grub.cfg`
- e) Restart the Linux host.

### Configure the Citrix ADC BLX appliance to use DPDK ports

Configuring the Citrix ADC BLX appliance with DPDK ports consists of setting the related parameters in the Citrix ADC BLX configuration file (`blx.conf`).

#### To configure the Citrix ADC BLX appliance with DPDK ports:

1. Open the Citrix ADC BLX configuration file (`blx.conf`) present in the Linux host. The complete path of the Citrix ADC BLX configuration file is: `/etc/blx/blx.conf`
2. Uncomment and set the following parameters:

- `interfaces`. Specifies the DPDK compatible NIC ports in addition to the non-DPDK NIC ports to be added as dedicated ports to the appliance.

The Citrix ADC BLX appliance automatically detects the DPDK compatible NIC ports from the list of ports specified to this parameter. The appliance then binds the detected DPDK compatible NIC ports to the DPDK VFIO module on the Linux host. After starting the Citrix ADC BLX appliance, all the specified ports in this parameter are automatically added as dedicated ports to the appliance.

This parameter specifies the port names (as shown on the Linux CLI) separated by space.

- `total-hugepage-mem`. Specifies the total size of huge pages to be allocated for the DPDK on the Linux host. The total size of huge pages can be specified in megabytes (MB or M) or gigabytes (GB or G). For example, 1024MB, 1024M, 1GB, and 1G.
  - Default value: 1GB. If the parameter is not set, the Citrix ADC BLX appliance allocates 1GB of huge pages for DPDK by default.
  - Minimum value: 1GB
  - Maximum value: As available on the Linux host.

3. Save the Citrix ADC BLX configuration file (`blx.conf`).

4. Restart the Citrix ADC BLX appliance by running the following command in the Linux host CLI:

```
systemctl start blx
```

For more information on starting a Citrix ADC BLX appliance, see [Start the Citrix ADC BLX appliance](#).

### Sample configuration

In the following sample excerpt of a `blx.conf` file, Linux NIC ports `ens1`, `enp1s0f0`, and `enp1s0f1` are specified to the `interfaces` parameter. Port `ens1` is a non-DPDK port, `enp1s0f0` and `enp1s0f1` are DPDK compatible ports. `total-hugepage-mem` Parameter is set to 2GB.

The Citrix ADC BLX appliance automatically detects `enp1s0f0` and `enp1s0f1` as DPDK compatible ports and binds them to the DPDK VFIO module on the Linux host. Also, the appliance allocates 2GB of huge pages for DPDK.

After starting the Citrix ADC BLX appliance, `ens1`, `enp1s0f0`, and `enp1s0f1` are added as dedicated ports to the appliance. `enp1s0f0`, and `enp1s0f1` function as DPDK ports on the Citrix ADC BLX appliance.

```
1 blx-system-config
2 {
```

```

3
4 ...
5     worker-processes: 6
6 ...
7     interfaces: ens1 enp1s0f0 enp1s0f1
8 ...
9     total-hugepage-mem: 2G
10 ...
11     host-ipaddress: 198.51.100.11/24
12 ...
13 }
14
15
16 ...
17
18 static-routes
19 {
20
21 ...
22     default 198.51.100.1
23 ...
24 }
25
26 ...
27
28 <!--NeedCopy-->

```

As shown in the following output of `show interface summary` operation in the Citrix ADC BLX CLI, `ens1` is added as 0/3, `enp1s0f0` is added as 10/1, and `enp1s0f1` is added as 40/1 interfaces on the appliance.

```

1 > sh interface summary
2 -----
3           Interface  MTU      MAC              Suffix
4 -----
5 1      0/1           65535    f6:d5:34:f7:e4:96  NetScaler Linux
6      Interface
7 2      0/2           1500     ee:14:18:4a:5b:92  NetScaler Linux
8      Interface
9 3      0/3           1500     2a:ca:db:ee:66:91  NetScaler Linux
10     Interface

```

```
8 4 10/1 1500 0c:c4:7a:3a:44:4d 10Gig(net_ixgbe) DDPK
   Interface
9 5 40/1 1500 68:05:ca:33:ba:b0 40Gig(net_i40e) DDPK
   Interface
10 Done
11 <!--NeedCopy-->
```

## Configure a Citrix ADC BLX appliance with DDPK Mellanox ports

A Citrix ADC BLX appliance supports Mellanox ports (with MLX5 DDPK driver) on the Linux host to be used as DDPK ports on the appliance.

The Citrix ADC BLX appliance automatically detects the specified Mellanox NIC ports on the Linux host and initializes them in DDPK mode. After starting the Citrix ADC BLX appliance, the DDPK Mellanox NIC ports are added as dedicated ports to the appliance.

Configuring the Citrix ADC BLX appliance with DDPK Mellanox ports consists of the following steps:

- Download and install Mellanox OpenFabrics Enterprise Distribution on the Linux host
- Configure the Citrix ADC BLX appliance to use DDPK Mellanox ports

### Before you Begin

Before you start configuring the Citrix ADC BLX appliance with DDPK Mellanox ports, make sure that:

- You have set the required parameters in the Citrix ADC BLX configuration file (blx.conf) as mentioned in [Configure a Citrix ADC BLX appliance in dedicated mode](#).
- You have read [Limitations of Mellanox ports in Citrix ADC BLX appliance with DDPK support](#).

### Download and install Mellanox OpenFabrics Enterprise Distribution on the Linux host

Mellanox OFED (MLNX\_OFED) is a Mellanox tested and packaged version of OpenFabrics Enterprise Distribution (OFED). Mellanox OFED is used for running the Mellanox ports on a Linux host. Download the Mellanox OFED package from the official Mellanox website to the Linux host. Then, install the Mellanox OFED DDPK libraries and kernel modules on the Linux host.

#### To download Mellanox OFED package on the Linux host:

1. Access the official Mellanox OFED page at [Mellanox OpenFabrics Enterprise Distribution for Linux \(MLNX OFED\)](#).
2. Download the appropriate Mellanox OFED package based on the Linux OS version and Linux kernel version present on the host. Then install the Mellanox OFED package on the Linux host.

**Note:**

See the **official Mellanox OFED for Linux documentation**:

- for a list of a Mellanox OFED packages and the supported Linux OS versions and Linux Kernel versions.
- for more information on downloading and installing a Mellanox OFED package on a linux host.

**To install the Mellanox OFED DPDK libraries on the Linux host:**

Run the following command in the Linux host CLI:

```
1 ./mlnxofedinstall --upstream-libs - dpdk  
2 <!--NeedCopy-->
```

**Configure the Citrix ADC BLX appliance to use DPDK Mellanox ports**

For adding the DPDK Mellanox ports to the Citrix ADC BLX appliance, you must set the **interface** parameter with the name of the DPDK Mellanox ports.

**To configure the Citrix ADC BLX appliance to use DPDK Mellanox ports:**

1. Open the Citrix ADC BLX configuration file (blx.conf) present in the Linux host. The complete path of the Citrix ADC BLX configuration file is: `/etc/blx/blx.conf`
2. Set the **interfaces** parameter with the names of the DPDK Mellanox ports (as shown on the Linux CLI), to be used in the Citrix ADC BLX appliance. Specify the port names separated by commas.
3. Uncomment and set the following parameters:
  - **interfaces**. Specifies the DPDK Mellanox ports to be added as dedicated ports to the appliance.

The Citrix ADC BLX appliance automatically detects the specified Mellanox NIC ports on the Linux host and initializes them in DPDK mode. After starting the Citrix ADC BLX appliance, the DPDK Mellanox NIC ports are added as dedicated ports to the appliance.

This parameter specifies the port names (as shown on the Linux CLI) separated by space.

**Note:**

A Citrix ADC BLX appliance supports only one type of DPDK NIC ports at a time. For example, either all Mellanox ports or all Intel ports.



- `total-hugepage-mem`. Specifies the total size of huge pages to be allocated for the DPDK on the Linux host. The total size of huge pages can be specified in megabytes (MB or M) or gigabytes (GB or G). For example, `1024MB`, `1024M`, `1GB`, and `1G`.
    - Default value: `1GB`. If the parameter is not set, the Citrix ADC BLX appliance allocates `1GB` of huge pages for DPDK by default.
    - Minimum value: `1GB`
    - Maximum value: As available on the Linux host.
4. Save the Citrix ADC BLX configuration file (`blx.conf`).
  5. Restart the Citrix ADC BLX appliance by running the following command in the Linux host CLI:

```
systemctl start blx
```

For more information on starting a Citrix ADC BLX appliance, see [Start the Citrix ADC BLX appliance](#).

### Sample configuration

In the following sample excerpt of a `blx.conf` file, Linux NIC ports `ens1`, `ens1f0`, and `ens1f1` are specified to the `interfaces` parameter. Port `ens1` is a non-DPDK port, `ens1f0` and `ens1f1` are Mellanox ports. Parameter `total-hugepage-mem` is set to `2GB`.

The Citrix ADC BLX appliance automatically detects `ens1f0` and `ens1f1` as Mellanox ports and initializes them in DPDK mode. Also, the appliance allocates `2GB` of huge pages for DPDK.

After starting the Citrix ADC BLX appliance, `ens1`, `ens1f0`, and `ens1f1` are added as dedicated ports to the appliance. `ens1f0`, and `ens1f1` function as DPDK ports on the Citrix ADC BLX appliance.

```
1 blx-system-config
2 {
3
4 ...
5     worker-processes: 6
6 ...
7     interfaces: ens1 ens1f0 ens1f1
8 ...
9     total-hugepage-mem: 2G
10 ...
11     host-ipaddress: 198.51.100.11/24
12 ...
13 }
14
15
```

```

16 ...
17
18 static-routes
19 {
20
21 ...
22     default 198.51.100.1
23 ...
24 }
25
26 ...
27
28 <!--NeedCopy-->

```

As shown in the following output of `show interface summary` operation in the Citrix ADC BLX CLI, `ens1` is added as 0/3, `ens1f0` is added as 100/1, and `ens1f1` is added as 100/2 interfaces on the appliance.

```

1 > sh interface summary
2 -----
3      Interface  MTU      MAC      Suffix
4 -----
5 1      0/1      65535    f6:d5:34:f7:e4:96    NetScaler Linux
6      Interface
7 2      0/2      1500     ee:14:18:4a:5b:92    NetScaler Linux
8      Interface
9 3      0/3      1500     12:64:f3:e3:d3:36    NetScaler Linux
10     Interface
11 4      100/1     1500     b8:59:9f:e0:70:28    100Gig(mlx5_p...DPDK
12     Interface
13 5      100/2     1500     b8:59:9f:e0:70:29    100Gig(mlx5_p...DPDK
14     Interface
15
16 Done
17 <!--NeedCopy-->

```

### Software Receive Side Scaling support for Citrix ADC BLX appliance in DPDK mode

A Citrix ADC BLX appliance in DPDK mode and configured with a higher number of packet engines does not support a NIC port with a lesser number of send (Tx) and receive (Rx) queues.

A Citrix ADC BLX appliance in DPDK mode does not use a NIC port if both of the following conditions are met:

- The appliance has a NIC port that supports a limited number of send queues (Tx) and receive queues (Rx). For example, 7
- The appliance is configured with a higher number of packet engines. For example, 28.

To resolve this issue, from build 13.1 21.x, the Citrix ADC BLX appliance uses software receive side scaling (RSS) to efficiently distribute received packets on the NIC ports across multiple packet engines.

The software RSS module assigns a logical Rx and Tx queue pair to each NIC port. The queue pair is then mapped to packet engine PE-0.

For each packet in the Rx queue of a NIC port, the PE-0 selects a packet engine using a RSS hash algorithm. PE-0 then sends the packet to the selected packet engine for processing. After processing of the packet is complete, PE-0 sends the packet to the Tx queue of the NIC port.

## Configure a Citrix ADC BLX appliance in non-DPDK dedicated mode to use the nsdrv driver

June 8, 2022

A Citrix ADC BLX appliance in non-DPDK dedicated mode supports a user space driver called `nsdrv` for higher throughput. The `nsdrv` driver owns all the interaction with Linux kernel for packet reception and transmission along with the distribution of traffic across different PEs.

The Citrix ADC BLX appliance supports the following options for creating a number of `nsdrv` driver processes for each dedicated port.

- **1** - Only one driver process is created for each dedicated port. Rx and Tx occur sequentially.
- **2** - One Rx process and one Tx thread are created for each dedicated port.
- **3** - one Rx process and 2 Tx threads are created for each dedicated port.

### Before you begin

Before you configure the Citrix ADC BLX appliance in non-DPDK dedicated mode to use the `nsdrv` driver, make sure that:

- The Linux host must have at least **n** number of cores based on the following calculation:

```
1  n >= WP + (INT*P) + 1
2  <!--NeedCopy-->
```

where:

- **WP**: Number of worker processes (packet engines) for the Citrix ADC BLX appliance. The `worker-processes` parameter in the Citrix ADC BLX configuration file (`blx.conf`) specifies the number of packet engines for the appliance.
- **INT**: Number of dedicated Linux host NIC ports for the Citrix ADC BLX appliance. The `interface` parameter in the Citrix ADC BLX configuration file (`blx.conf`) specifies the Linux host NIC ports dedicated for the Citrix ADC BLX appliance.
- **P**: Number of `nsdrvd` driver processes for the Citrix ADC BLX appliance. The `nsdrvd` parameter in the Citrix ADC BLX configuration file (`blx.conf`) specifies the number of `nsdrvd` driver processes.

**Example:** For a Citrix ADC BLX appliance with:

- **WP**: 3 packet engines
- **INT**: 2 dedicated interfaces
- **P**: 3 `nsdrvd` processes

The Linux host must have at least the following number of cores to run the Citrix ADC BLX appliance in dedicated mode with `nsdrvd` driver:

```
1  n = WP + (INT*P) + 1 = (3+2*3+1) = 10
2  <!--NeedCopy-->
```

- You have set the required parameters in the Citrix ADC BLX configuration file (`blx.conf`) as mentioned in [Configure a Citrix ADC BLX appliance in dedicated mode](#).

### Steps to configure a Citrix ADC BLX appliance in non-DPDK dedicated mode to use the `nsdrvd` driver

Configuring the Citrix ADC BLX appliance to use the `nsdrvd` driver consists of setting the related parameters in the Citrix ADC BLX configuration file (`blx.conf`).

#### To configure a Citrix ADC BLX appliance to use the `nsdrvd` driver:

1. Open the Citrix ADC BLX configuration file (`blx.conf`) present in the Linux host. The complete path of the Citrix ADC BLX configuration file is: `/etc/blx/blx.conf`
2. Uncomment and set the following parameters:
  - `nsdrvd`. Specifies the number of `nsdrvd` driver processes to be created for each dedicated NIC port.

Possible values:

- **1** - Only one driver process is created for each dedicated port. Rx and Tx occurs sequentially.
  - **2** - One Rx process and one Tx thread are created for each dedicated port.
  - **3** - one RX process and 2 Tx threads are created for each dedicated port.
3. Save the Citrix ADC BLX configuration file (blx.conf).
  4. Restart the Citrix ADC BLX appliance by running the following command in the Linux host CLI:

```
systemctl start blx
```

For more information on starting a Citrix ADC BLX appliance, see [Start the Citrix ADC BLX appliance](#).

## Start the Citrix ADC BLX appliance

February 22, 2022

Start the Citrix ADC BLX appliance by running the following command in the Linux CLI:

```
1 systemctl start blx
2 <!--NeedCopy-->
```

Check the status of the Citrix ADC BLX appliance by running the following command in the Linux CLI:

```
1 systemctl status blx
2 <!--NeedCopy-->
```

After successfully deploying a Citrix ADC BLX appliance, you can configure ADC features on the appliance by using one of the following methods:

- Citrix ADC CLI
- Citrix ADC GUI
- Citrix NITRO REST APIs

For more information on using these methods, see [Access a Citrix ADC BLX appliance and configure ADC features](#).

For more information on Citrix ADC features, see [Citrix ADC Documentation](#).

**Notes:**

- You can check the processes running on the Linux host by running the following grep command:

```
ps aux | grep ns
```

- Ensure to check that the `nspe` process is running:

```
root 68332 2.7 5.5 485264 442084 ? Ss 16:25 0:02 /usr/sbin/nspe 1
```

- To stop the Citrix ADC BLX appliance, use the following command, which stops all the associated Citrix ADC BLX processes:

```
systemctl stop blx
```

- To uninstall the Citrix ADC BLX appliance from the Linux host, use the following command:

- Run the following command on a Red Hat enterprise Linux (RHEL) host:

```
yum remove blx
```

- Run the following command on a Debian based Linux host to uninstall the Citrix ADC BLX appliance but retain the BLX configuration file:

```
apt remove blx
```

- Run the following command on a Debian based Linux host to uninstall the Citrix ADC BLX appliance and also remove the BLX configuration file:

```
apt purge blx
```

On running the `apt purge blx` command, the Linux host might display some warning messages that some Citrix ADC BLX related system files were not removed even when all these files were removed.

## Access a Citrix ADC BLX appliance and configure ADC features

September 14, 2021

You can access a Citrix ADC BLX appliance and configure ADC features by using one of the following methods:

- Citrix ADC CLI
- Citrix ADC GUI
- Citrix NITRO REST APIs

For information about Citrix ADC features, see [Citrix ADC Documentation](#).

## Access a Citrix ADC BLX appliance and configure ADC features by using the Citrix ADC CLI

A Citrix ADC BLX appliance has a command line interface (CLI) where you can run ADC CLI commands to configure ADC features on the appliance.

You can remotely access the CLI of a Citrix ADC BLX appliance by connecting through the secure shell (SSH) from a workstation.

The following table lists the IP address and port on which the Citrix ADC CLI is available through SSH:

Citrix ADC BLX deployment mode	IP address and port to access Citrix ADC CLI through SSH
Shared	<Linux host IP address>:9022
Dedicated	<Citrix ADC IP address (NSIP)>:22

### To access a Citrix ADC BLX appliance by using the Citrix ADC CLI:

1. On your workstation, start an SSH client.
2. Specify the IP address and port on which the CLI of the BLX appliance is available, and then connect to the CLI.
3. Log on to the BLX appliance by using your BLX login credentials.

#### IMPORTANT:

- On your first logon with default admin (`nsroot`) password, the BLX appliance prompts you to change the password for security reasons. After changing the password, you must save the configuration. If the configuration is not saved and the appliance restarts, you must log on with the default password. Change the password again at the prompt and save the configuration.
- Strong password enforcement is enabled by default in a Citrix ADC BLX appliance for all local system users. The default minimum length for a strong password is 4 characters. A strong password must contain at least one lower case character, one upper case character, one numeric character, and one special character from the set (`!, @, ##, (, ), $, %, ^, &, *`). Make sure that the password for each system user of a Citrix ADC BLX appliance matches the strong password criteria. Otherwise, users with weak passwords cannot access the appliance. For more information on the strong password criteria, see:
  - [How to enforce password complexity on a Citrix ADC appliance](#)
  - [Citrix ADC command reference](#)

For more information about Citrix ADC CLI commands, see the [Citrix ADC Command Reference Guide](#).

## Access a Citrix ADC BLX appliance and configure ADC features by using the Citrix ADC GUI

The Citrix ADC GUI includes a configuration utility and a dashboard utility.

The following list shows the management IP address of the BLX appliance deployed in dedicated and shared mode:

- BLX in dedicated mode: Citrix ADC IP address (NSIP)
- BLX in shared mode: Linux host IP address

The following table lists the default IP address and port on which the Citrix ADC GUI is available:

Citrix ADC BLX deployment mode	Access type	IP address and port to access Citrix ADC GUI
Shared	HTTP	<Linux host IP address>:9080
Shared	HTTPS	<Linux host IP address>:9443
Dedicated	HTTP	<Citrix ADC IP address (NSIP)>:9080
Dedicated	HTTPS	<Citrix ADC IP address (NSIP)>:9443

You can modify these default port numbers to access the GUI in the BLX configuration file (blx.conf) file. You must restart the BLX appliance after you modify the blx.conf file.

The Citrix ADC GUI prompts you for BLX login credentials. Once you log on to the Citrix ADC GUI, you can configure the Citrix ADC BLX appliance through the configuration utility.

### IMPORTANT:

- On your first logon with default admin (`nsroot`) password, the BLX appliance prompts you to change the password for security reasons. After changing the password, you must save the configuration. If the configuration is not saved and the appliance restarts, you must log on with the default password. Change the password again at the prompt and save the configuration.
- Strong password enforcement is enabled by default in a Citrix ADC BLX appliance for all local system users. The default minimum length for a strong password is 4 characters. A strong password must contain at least one lower case character, one upper case character, one numeric character, and one special character from the set (`!, @, ##, (, ), $, %, ^, &, *`).



Make sure that the password for each system user of a Citrix ADC BLX appliance matches the strong password criteria. Otherwise, users with weak passwords cannot access the appliance. For more information on the strong password criteria, see:

- [How to enforce password complexity on a Citrix ADC appliance](#)
- [Citrix ADC command reference](#)

**To access a Citrix ADC BLX appliance in shared mode by using the Citrix ADC GUI:**

1. Open a web browser.
2. Use one of the following access methods:
  - For HTTP access, type the following in the URL field: <Linux host IP address>:9080
  - For HTTPS access, type the following in the URL field: <Linux host IP address>:9443
3. On the login page, enter your BLX login credentials, and click Login.

**To access a Citrix ADC BLX appliance in dedicated mode by using the Citrix ADC GUI:**

1. Open a web browser.
2. Use one of the following access methods:
  - For HTTP access, type the following in the URL field: <Citrix ADC IP address (NSIP)>:9080
  - For HTTPS access, type the following in the URL field: <Citrix ADC IP address (NSIP)>:9443
3. On the login page, enter your BLX login credentials, and click Login.

**Configure a Citrix ADC BLX appliance and configure ADC features by using the NITRO APIs**

You can use the Citrix ADC NITRO API to configure a Citrix ADC BLX appliance. NITRO exposes its functionality through Representational State Transfer (REST) interfaces. Therefore, NITRO applications can be developed in any programming language. Also, for applications that must be developed in Java or .NET or Python, NITRO APIs are exposed through relevant libraries that are packaged as separate Software Development Kits (SDKs).

Similar to the Citrix ADC GUI, the NITRO API requests must be sent to port 9080 (HTTP) or 9443 (HTTPS) of the Citrix ADC BLX management IP address.

**To configure a Citrix ADC BLX appliance in shared mode by using the NITRO API, in a web browser, type:**

`http://<Linux host IP address>:9080/nitro/v1/config/<resource-type>`

`https://<Linux host IP address>:9443/nitro/v1/config/<resource-type>`

**To retrieve statistics of a Citrix ADC BLX appliance in shared mode by using the NITRO API, in a web browser, type:**

`http://<Linux host IP address>:9080/nitro/v1/stats/<resource-type>`

`https://<Linux host IP address>:9443/nitro/v1/stats/<resource-type>`

**To configure a Citrix ADC BLX appliance in dedicated mode by using the NITRO API, in a web browser, type:**

`http://<Citrix ADC IP address (NSIP)>:9080/nitro/v1/config/<resource-type>`

`https://<Citrix ADC IP address (NSIP)>:9443/nitro/v1/config/<resource-type>`

**To retrieve statistics of a Citrix ADC BLX appliance in dedicated mode by using the NITRO API, in a web browser, type:**

`http://<Citrix ADC IP address (NSIP)>:9080/nitro/v1/stats/<resource-type>`

`https://<Citrix ADC IP address (NSIP)>:9443/nitro/v1/stats/<resource-type>`

For more information about using the Citrix ADC NITRO API, see [Citrix ADC NITRO APIs](#).

## Configure SSH access to the Linux host running a Citrix BLX appliance in dedicated mode

July 28, 2022

By default, SSH access to a Linux host running Citrix BLX appliance in a dedicated mode cannot be done through the dedicated interfaces of the appliance.

You can configure SSH access to the Linux host through the dedicated interfaces of the Citrix ADC BLX appliance. This feature is useful in a single interface Linux host running a Citrix BLX appliance in dedicated mode.

You can configure SSH access to the Linux host in either of the following types:

---

Types of SSH access to Linux host	IP address and port for SSH access
Provide SSH access on port 9022 of Citrix ADC IP (NSIP) of the Citrix ADC BLX appliance.	<code>&lt;Citrix ADC IP address (NSIP)&gt;:9022</code>

---

Types of SSH access to Linux host	IP address and port for SSH access
Define a new IP address in the subnet of Citrix ADC IP (NSIP) and provide SSH access on port 22. Also, all other ports on the Linux host are reachable using the new IP address. For example, a <code>rsyslog</code> server running on the Linux host on port 514/UDP is now reachable on port 514 of the new IP address.	<new IP address on the Citrix ADC IP address (NSIP) subnet>:22

---

## Before you begin

Before you start configuring SSH access to the Linux host running a Citrix BLX appliance in dedicated mode, note the following points:

- The steps to configure SSH access to the Linux host running a Citrix BLX appliance in dedicated mode is not applicable to a Linux host running a Citrix BLX appliance in shared mode.

## Steps to configure SSH access to the Linux host running a Citrix BLX appliance in dedicated mode

Configuring SSH access to the Linux host consists of setting the following parameters in the Citrix ADC BLX configuration file (`blx.conf`):

- `blx-managed-host`. This parameter enables SSH access to the Linux host. By default, this parameter is commented and set to 0.
- `host-ipaddress`. The parameter specifies the IP address (in the subnet of Citrix ADC IP (NSIP)) on which SSH access to the Linux host is to be configured. By default, this parameter is commented, which configures SSH access to the Linux host on <Citrix ADC IP address (NSIP)>:9022.

When you uncomment this parameter and set it with a new IP address, SSH access to the Linux host is configured on <new IP address>:22.

Also, all other ports on the Linux host are reachable using the new IP address.

### To configure SSH access to the Linux host running a Citrix BLX appliance in dedicated mode:

1. Open the Citrix ADC BLX configuration file (`blx.conf`) present in the Linux host. The complete path of the Citrix ADC BLX configuration file is: `/etc/blx/blx.conf`
2. Uncomment the line containing the `blx-managed-host` parameter and then set it to 1.
3. Do one of the following:

- For configuring SSH access to the Linux host on <Citrix ADC IP address (NSIP)>:9022:
    - Make sure that the line containing the `host-ipaddress` parameter is commented.
  - For configuring SSH access to the Linux host on <new IP address on the Citrix ADC IP address (NSIP) subnet>:22:
    - Uncomment the line containing the `host-ipaddress` and set it to the new IP address.
4. Save the Citrix ADC BLX configuration file (`blx.conf`).
  5. Restart the Citrix ADC BLX appliance by running the following command on the Linux CLI:

```
systemctl restart blx
```

### Sample configuration - SSH access to the Linux host using the Citrix ADC IP (NSIP) address

In the following sample excerpt of a `blx.conf` file of a Citrix ADC BLX appliance in dedicated mode, `ipaddress` parameter is set to 198.51.100.10. `ipaddress` defines the Citrix ADC IP address (NSIP). `blx-managed-host` is uncommented and set to 1, which enables SSH access on the Linux host. Because `host-ipaddress` is commented, SSH access to the Linux host is configured on 198.51.100.10:9022.

```
1 blx-system-config
2 {
3
4 ...
5     ipaddress: 198.51.100.10/24
6 ...
7     blx-managed-host: 1
8 ...
9     # host-ipaddress:
10 ...
11 }
12
13
14 ... .
15
16 static-routes
17 {
18
19 ...
20     default 198.51.100.1
21 ...
```

```
22  }
23
24  ...
25  <!--NeedCopy-->
```

### Sample configuration - SSH access to the Linux host using a new IP address

In the following sample excerpt of a `blx.conf` file of a Citrix ADC BLX appliance in dedicated mode, `ipaddress` parameter is set to 198.51.100.10. `ipaddress` defines the Citrix ADC IP address (NSIP). `blx-managed-host` is uncommented and set to 1, which enables SSH access on the Linux host. `host-ipaddress` is uncommented and set to 198.51.100.11, which is in the same subnet as Citrix ADC IP address (NSIP)=198.51.100.10.

SSH access to the Linux host is configured on 198.51.100.11:22. Also, all other ports on the Linux host are reachable using 198.51.100.11. For example, a `rsyslog` server running on the Linux host on port 514/UDP is now reachable on 198.51.100.11:514.

```
1  blx-system-config
2  {
3
4  ...
5      ipaddress: 198.51.100.10/24
6  ...
7      blx-managed-host: 1
8  ...
9      host-ipaddress: 198.51.100.11/24
10 ...
11 }
12
13
14 ... .
15
16 static-routes
17 {
18
19 ...
20     default 198.51.100.1
21 ...
22 }
23
24 ...
25
```

```
26 <!--NeedCopy-->
```

The Citrix ADC BLX appliance displays 198.51.100.11 as type HOST IP as part of the show ns IP operation. 198.51.100.11 does not play any role in any of the functionalities of the Citrix ADC BLX appliance.

```

1 > show ns ip
2   Ippaddress      Traffic Domain  Type           Mode           Arp
3   Icmp           Vserver        State
4   -----
5   -----
6   -----
7
8 1) 198.51.100.10      0             NetScaler IP   Active         Enabled
9   Enabled NA         Enabled
10
11 2) 192.0.0.1         0             SNIP           Active         Enabled
12   Enabled NA         Enabled
13
14 3) 198.51.100.11    0             Host IP        Active         Enabled
15   Enabled NA         Enabled
16
17
18 Done
19 <!--NeedCopy-->
```

## Limitations and usage guidelines

September 19, 2022

The following are the limitations and some usage guidelines related to Citrix ADC BLX appliances.

- The following are the limitations related to LA/LACP channels:
  - LA/LACP channels are not supported for shared mode NIC interfaces.
  - LA/LACP channels are supported only between dedicated NIC interfaces or only between DPDK NIC interfaces.
  - LA/LACP channels are not supported for blx1 and ns1 virtual interfaces.
- High availability is supported for Citrix ADC BLX appliances only in dedicated mode.
- High availability for ADC BLX appliances is not supported if the `nsinternal` user login is disabled.
- Web application firewall (WAF) is supported only for ADC BLX in dedicated mode.
- In a Citrix ADC BLX appliance deployed in dedicated mode, management HTTP or HTTPS port (`mgmt-http-port` or `mgmt-https-port`) settings specified in the BLX configuration file do not

apply. By default, 9080 and 9443 port numbers are dedicated for HTTP and HTTPS management access.

To change these ports for ADC BLX appliances in dedicated mode, you must use the Citrix ADC command:

```
set ns param (-mgmthttpport <value> | -mgmthttpsport <value>).
```

Example:

```
set ns param -mgmthttpport 2080”
```

- If firewall is enabled on the Linux host, then you might have to add exceptions for the Citrix ADC BLX management ports in addition to the SYSLOG ports.
- A stable start for a Citrix ADC BLX appliance might take around 45 seconds.
- Citrix ADC BLX configurations are stored in the `/nsconfig/ns.conf` file. For configurations to be available across sessions, you must save the configuration after every configuration change.

To view the running configuration by using the Citrix ADC BLX CLI

At the Citrix ADC BLX CLI prompt, type:

```
show ns runningConfig
```

To save configurations by using the Citrix ADC BLX CLI

At the command prompt, type:

```
save ns config
```

- The Citrix ADC BLX configurations in `/nsconfig/ns.conf` take precedence over `/etc/blx/blx.conf` file.
- A Citrix ADC BLX appliance does not start if the memory allocated is less than 1 GB per ADC BLX worker-processes.
- The following system settings are changed on installing a Citrix ADC BLX appliance in Linux environment: `ip_forward` is set to 1.
- After a Citrix ADC BLX appliance is uninstalled, BLX configuration file `blx.conf` is retained and backed up as `blx.conf.rpmsave`.

To apply this backup configuration file to a newly installed Citrix ADC BLX appliance on the same Linux host, you must manually rename the file back to `blx.conf`

- Citrix does not recommend running a Citrix ADC BLX appliance on the following Ubuntu version because the Citrix ADC BLX appliance might run into some packet drop related issues.

`Ubuntu version 16.04.5 with kernel version 4.4.0-131-generic`

- A Citrix ADC BLX appliance deployed on CentOS Linux version 8.0 host or Oracle Linux version 8.0 host might not start or function properly if the following condition is met:

- SELinux policy is enabled on the Linux host. SELinux prevents the `systemd` process from running some Citrix ADC BLX system files.

Workaround: Disable SELinux on the Linux host.

- A Citrix ADC BLX appliance supports a maximum of nine NIC ports (DPDK NIC ports, or non-DPDK NIC ports, or both).

### Limitations specific to a Citrix ADC BLX appliance with DPDK ports

- A Citrix ADC BLX appliance with DPDK ports might fail to start on Linux hosts running on some older CPU models.

#### Examples:

- Intel(R) Xeon(R) CPU E5-2690 v4 @ 2.60 GHz
- Intel(R) Xeon(R) CPU E5504 @ 2.00 GHz
- The Linux host might crash if you unbind NICs bound to the DPDK module when the Citrix ADC BLX appliance is running.
- A Citrix ADC BLX appliance with DPDK ports takes a little more time to restart as compared to a Citrix ADC BLX appliance without DPDK ports.
- All DPDK bound Linux ports are automatically dedicated for the Citrix ADC BLX appliance and cannot be used for other DPDK Linux applications.
- A Citrix ADC BLX appliance running on a Linux host VM in a VMware virtualization platform does not support VMXNET3 network ports as DPDK ports.

By default, the VMXNET3 network ports specified as dedicated ports are added as DPDK ports on the Citrix ADC appliance but they don't function as expected.

#### Workaround:

You can configure the Linux host VM so that VMXNET3 network ports are added as non-DPDK dedicated ports to the Citrix ADC BLX appliance.

Perform the following steps by using the Linux host CLI:

1. Add the following settings in the system map file `/etc/blx/ns_static_drv_map_file` for each wanted VMXNET3 network port:

```
1 Status=Failed dpdk_test_init=Failed
2 <!--NeedCopy-->
```



**Example:**

```
1 #cat /etc/blx/ns_static_drv_map_file
2
3 Interface=ens2f1 Slot=0000:2f:00.1 Current_driver=vfio-pci
   Old_driver=igb Status=Failed dpdk_test_init=Failed
4 <!--NeedCopy-->
```

2. Restart the Citrix ADC BLX appliance.

```
1 systemctl restart blx
2 <!--NeedCopy-->
```

After you restart the Citrix ADC BLX appliance, the VMXNET3 network ports are added as non-DPDK ports to the Citrix ADC BLX appliance.

- The Citrix ADC appliance supports trunk mode or VLAN tagging only for DPDK ports.

**Limitations of DPDK Mellanox ports in a Citrix ADC BLX appliance**

- A Citrix ADC BLX appliance supports only one type of DPDK ports at a time. For example, either all Mellanox ports or all Intel ports.
- A Citrix ADC BLX appliance supports only the MLX5 DPDK driver for Mellanox ports.
- For more information about the MLX5 DPDK driver and its limitations, see the official [MLX5 DPDK documentation](#).
- For more information about Mellanox NICs and its limitations, see the official [Mellanox documentation](#).

**Citrix ADC BLX cluster**

August 26, 2022

A Citrix ADC BLX cluster is a group of Citrix ADC BLX appliances working together as a single system. Each appliance of the cluster is called a node. A Citrix ADC BLX cluster can include as few as 1 or as many as 32 Citrix ADC BLX appliances as nodes.

## Before you begin

This section lists prerequisites and points to note for setting up a Citrix ADC BLX cluster:

- Make sure that you understand the Citrix ADC cluster feature. For more information, see [Citrix ADC Cluster](#).
- Make sure that the following configurations are present on each Linux host of the Citrix ADC BLX appliances:
  - NTP is configured on each Linux host:
    - \* For more information about configuring NTP on Oracle Linux, see [Official Oracle Linux documentation](#).
    - \* For more information about configuring NTP on Ubuntu Linux, see [Official Ubuntu Linux documentation](#).
    - \* For more information about configuring NTP on CentOS Linux, see [Official CentOS Linux documentation](#).
  - Core dump is enabled on each Linux host for generating core dumps whenever the Citrix ADC BLX appliance crashes.
  - Logging and `rsyslog` settings to reduce repeated log messages are configured on each Linux host for logs related to the Citrix ADC BLX appliance.
- Cluster is supported for Citrix ADC BLX appliances only in dedicated mode.
- All general prerequisites of a Citrix ADC cluster apply to Citrix ADC BLX cluster as well.

For more information about general prerequisites for setting up a Citrix ADC BLX cluster, see [General Prerequisites for Citrix ADC cluster](#).
- For information about the Citrix ADC features supported in a Citrix ADC BLX cluster, see [Citrix ADC features supportability matrix for Citrix ADC BLX cluster](#).
- For information about automating Citrix ADC deployments using Terraform, see:
  - [Citrix ADC Terraform provider on GitHub](#)
  - [Citrix ADC Terraform automation scripts on GitHub](#)
- Citrix ADC BLX cluster set ups are not supported in public cloud platforms, for example Amazon Web Services (AWS) cloud.

## Limitations of a Citrix ADC BLX cluster

A Citrix ADC BLX cluster has the following limitations:

- INC mode is not supported.
- CLAG based traffic distribution is not supported.

- All limitations of a standalone Citrix ADC BLX appliance apply to a Citrix ADC BLX cluster as well.

For more information about limitations of a Citrix ADC BLX appliance, see [Citrix ADC BLX limitations](#).

## Setting up a Citrix ADC BLX cluster

For setting up a Citrix ADC BLX cluster, follow the general procedure for setting up a Citrix ADC cluster at [Citrix ADC Cluster](#). This docs set contains general information about Citrix ADC clusters. The information in this docs set applies for Citrix ADC BLX cluster as well.

## Configure core dumps for a Citrix ADC BLX appliance

June 17, 2021

Configure core dumps and core dump compression on the Linux host for generating core dumps whenever the Citrix ADC BLX appliance crashes.

### To configure core dumps and core dump compression for a Citrix ADC BLX appliance by using the Linux host CLI:

1. Create a file `/etc/security/limits.d/core.conf` with the following contents to enable core dumps for all users.

```
1 *      hard      core      unlimited
2 *      soft      core      unlimited
3 <!--NeedCopy-->
```

2. Add the following line to the file `/etc/systemd/system.conf`:

```
1 DefaultLimitCORE=infinity
2 <!--NeedCopy-->
```

3. Create a script file `/usr/bin/core-compress.sh` and add the following lines to the file:

```
1 #!/bin/bash
2
3 gzip -1 > /var/crash/core.$1.$2.$3.gz
4 <!--NeedCopy-->
```

Add execution permission to the script file by running the following command:

```
1 chmod +x /usr/bin/core-compress.sh
2 <!--NeedCopy-->
```

4. Set the core pattern by running the following command:

```
1 echo "|/usr/bin/core-compress.sh %e %p %s" > /proc/sys/kernel/
  core_pattern
2 <!--NeedCopy-->
```

5. Restart the `systemd` manager by running the following command:

```
1 systemctl daemon-reexec
2 <!--NeedCopy-->
```

6. Restart the Citrix ADC BLX appliance by running the following command:

```
1 systemctl restart blx
2 <!--NeedCopy-->
```

## Upgrade a Citrix ADC BLX appliance

July 20, 2022

Each Citrix ADC BLX release offers new and updated features with increased functionality. Citrix recommends you upgrade the Citrix ADC BLX appliance to the latest release to avail of the new features and bug fixes. A comprehensive list of enhancements, known issues, and bug fixes is included in the [release notes](#) accompanying every release announcement.

### Before you Upgrade a Citrix ADC BLX appliance

Before you start the upgrade process, make sure you check the following:

- Evaluate your organization's support agreement. Document support agreement and contacts details for support from Citrix Technical Support or the Citrix Authorized Partner.

- It is also important to understand the licensing framework and the types of licenses that can be used before you start to upgrade. For more information, see [Citrix ADC BLX licensing](#).
- Check the [New and deprecated commands, parameters, and SNMP OIDs](#) topic.
- Check the [FAQs](#) topic.
- Verify the upgrading procedures with a test environment.

## Steps to upgrade a Citrix ADC BLX appliance

Upgrading a Citrix ADC BLX appliance consists of the following steps:

1. Download the desired Citrix ADC BLX release package to the Linux host for upgrade.
2. Extract the Citrix ADC BLX release package on the Linux host.
3. Run the command on the Linux host CLI to upgrade the Citrix ADC BLX appliance.

### To download a Citrix ADC BLX installation package to the Linux host:

1. Access the official [Citrix ADC BLX downloads](#) page.
2. Navigate to the desired **Citrix ADC Release > Citrix ADC BLX image build** page.
3. Download the Citrix ADC BLX release package to the Linux host.

### To upgrade a Citrix ADC BLX appliance by using the Linux host CLI:

1. Untar the Citrix ADC BLX release package and then change the working directory to the extracted Citrix ADC BLX release directory:

```
1 tar -zxvf blx-<release number>-<build-number>.tar.gz
2
3 cd <path to the extracted Citrix ADC BLX release package directory
  >
4 <!--NeedCopy-->
```

### Sample output:

The following sample output shows that a Citrix ADC BLX release package `blx-13.1-27.59.tar.gz`, which is already downloaded to the `/var/blxinstall` directory of a Linux host, is untared. Then, the working directory is changed to the extracted directory `blx-13.1-27.59`.

```
1 > cd /var/blxinstall
2
3 > tar -zxvf blx-13.1-27.59.tar.gz
4
5 > cd blx-13.1-27.59
```

```
6
7 > pwd
8 /var/blxinstall/blx-13.1-27.59
9
10 <!--NeedCopy-->
```

2. Upgrade the Citrix ADC BLX appliance running on a Red Hat enterprise Linux (RHEL) host or Debian based Linux host.

- Run the following command on a Red Hat enterprise Linux (RHEL) based host:

```
1 yum -y install ./rpm
2 <!--NeedCopy-->
```

- Run the following command on a Debian based Linux host:

```
1 apt -y install ./deb
2 <!--NeedCopy-->
```

### **Verify entities status on the Citrix ADC BLX appliance after the upgrade**

After the Citrix ADC BLX appliance is upgraded, verify the status of the following entities:

- Virtual servers are in UP state
- Monitors are in UP state
- All certificates are present on the appliance
- All the licenses are present on the appliance

### **FAQs**

October 19, 2020

#### **What is Citrix ADC BLX?**

It is a bare metal software version of Citrix ADC that runs on Linux host as a set of processes.

### Why is there a need for a bare metal version of Citrix ADC?

Citrix BLX appliances provide simplicity with no virtual machine overhead for better performance. Also, you can run a Citrix ADC BLX appliance on your preferred server hardware.

### What is the difference between Citrix BLX, CPX and VPX appliances?

They are all software versions of Citrix ADC but Citrix ADC VPX is a virtual appliance and must run on a hypervisor installed on the server.

Citrix ADC CPX is a containerized version of Citrix ADC, which must reside in a container. Citrix ADC BLX is a lightweight software package that runs natively on Linux systems.

### When to use each?

Citrix ADC VPX, CPX, and BLX represent the most comprehensive, software-centric ADC lineup in the industry for supporting transition to hybrid multi-cloud. The following table gives guidance on the differences and use cases.

Product	Use Cases	Characteristics
Citrix ADC VPX (over hypervisor)	Virtualization of hardware infrastructure, consolidation of workloads over common infrastructure	hardware and OS agnostic, full isolation, and support for multitenancy
Citrix ADC CPX (with container)	DevOps, micro-services, automated staging, testing, and deployment, East-West traffic	Lightweight, small footprint, API gateway functions, micro-service centric, authentication
Citrix ADC BLX (on bare metal servers)	High traffic load, mission critical applications, latency sensitive workload, North-South traffic	Lightweight software package and no VM overhead

### What does the absence of a hypervisor or container mean?

With no hypervisor translation layer or container, the Citrix ADC BLX software has more control of the underlying hardware and therefore performance is better. It also means that there are no additional costs for hypervisor software.

### **Can I run a Citrix ADC BLX appliance on any server hardware?**

Yes, there is no hardware compatibility list (HCL) as the hardware does not matter.

### **How can I install Citrix ADC BLX appliance on a Linux server?**

Citrix ADC BLX is distributed as an `.rpm` file format (Red Hat Package Manager) and `.deb` (Debian based). These two formats are used in many Linux distributions and have become a de facto standard in the industry.

### **Can I automate the Citrix ADC BLX software deployment?**

Yes. Any software deployment tool in the data center that support `.rpm` or `.deb` can deploy Citrix ADC BLX appliance. Also, Citrix Application Delivery Manager (ADM) can deploy Citrix ADC BLX appliances.

### **If Citrix ADC BLX is installed on a server with Linux OS, can I install other things on the same server?**

Yes. Other process can be run alongside Citrix ADC BLX.

### **How is Citrix ADC BLX Packaged?**

Citrix ADC BLX comes in the regular Citrix ADC editions: Standard, Advanced, and Premium

### **How can you buy a Citrix ADC BLX appliance?**

Citrix ADC BLX is an entitlement to Pooled Capacity and vCPU subscription pricing. In vCPU subscription, the license is applied to the software based on the number of CPUs the Citrix ADC BLX is using. In Pooled Capacity, each Citrix ADC BLX deployed consumes an instance in addition to the relevant processing capacity.

### **Can a Citrix license currently being used for a Citrix ADC VPX appliance be used for a Citrix ADC BLX appliance?**

Yes, a Citrix pooled license can be used for a Citrix ADC BLX appliance as well.

### **Can a Citrix ADC BLX appliance be deployed in one-arm and two-arm modes at the same time?**

Yes.



**Does a Citrix ADC BLX appliance use its own network stack or use the network stack of the Linux host?**

A Citrix ADC BLX appliance in dedicated mode uses its own network stack. In shared mode, the Citrix ADC BLX appliance uses the network stack of the Linux host.

**Do Citrix ADC BLX appliances support high availability?**

High availability is supported for Citrix ADC BLX appliances only if they are deployed in dedicated mode.

**Can you set up a high availability pair between a Citrix ADC BLX appliance in shared mode and a Citrix ADC BLX appliance in dedicated mode?**

No.

**Can you set up high availability pair between a Citrix ADC BLX appliance and a Citrix ADC VPX or CPX appliance?**

No.

**Can a Citrix ADC BLX appliance run on a virtualized Linux virtual machine?**

Yes, a Citrix ADC BLX appliance in non-DPDK mode can be run on a virtualized Linux virtual machine.

**Is a Citrix ADC BLX appliance supported on non-x86 Linux platforms?**

No, a Citrix ADC BLX appliance is supported only on x86\_64 (64-bit) Linux platforms.

**What is the management IP address of a Citrix ADC BLX appliance?**

The following list shows the management IP address of the Citrix ADC BLX appliance deployed in dedicated or shared mode:

- Citrix ADC BLX appliance in dedicated mode: Citrix ADC IP address (NSIP)
- Citrix ADC BLX in shared mode: Linux host IP address

## **The management IP address (NSIP) of a Citrix ADC BLX appliance in dedicated mode was changed in the BLX configuration file (blx.conf) but the Citrix ADC BLX appliance still has the old management IP address?**

The management IP address of a Citrix ADC BLX appliance in dedicated mode is always the IP address (`ipaddress` parameter) set in BLX configuration file (`blx.conf`) unless configured using one of the following ways:

- **Citrix ADC BLX CLI:** Run the `set ns config` command in the Citrix ADC BLX CLI, and change the management IP address. The configuration changes made are saved in the Citrix ADC BLX saved configuration file (`/nsconfig/ns.conf`).
- **Citrix ADC BLX GUI:** On the Configuration utility screen of the Citrix ADC BLX GUI, click the gear icon on the top-right corner, click the **NSIP address** pane, and change the management IP address.

The configuration changes made are saved in the Citrix ADC BLX saved configuration file (`/nsconfig/ns.conf`).

The changes in the `ns.conf` file always take precedence over the `blx.conf` file.

## **Troubleshooting Tips**

February 22, 2022

### **Running the `systemctl start blx` command does not start the Citrix ADC BLX appliance?**

- Look for any logs related to BLX configuration file (`/etc/blx/blx.conf`) parsing error in the Citrix ADC BLX boot log file (`/var/log/blx-boot.log`).
- Look for crash related logs or any error logs in the SYSLOG file (`/var/log/messages`).

### **The Citrix ADC BLX appliance does not display any DPDK ports?**

Verify that Linux host ports, to be used by the Citrix ADC BLX appliance, are bound to DPDK.



**Locations**

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