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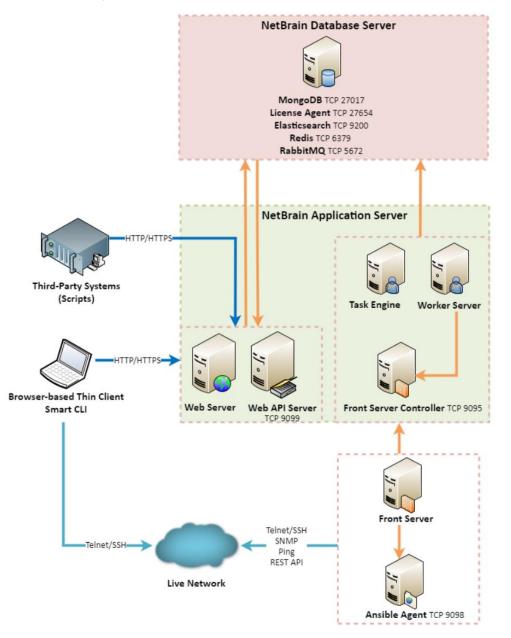
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# **1. System Overview**

NetBrain Integrated Edition is an adaptive automation platform, where you can integrate with your existing Network Management System (NMS) tools and IT workflows to automate documentation, troubleshooting, network change, and defense. It serves as an operating system of your whole network to relieve network professionals from manual CLI-digging and also empowers team collaboration to elevate productivity.

The browser-based interface of NetBrain Integrated Edition is backed by a full-stack architecture, adopting advanced distributed technologies to support large-scale networks with more expansion possibilities.

The distributed system architecture is as follows:



**Note:** The port numbers listed in the above architecture diagram are defaults only. The actual port numbers used during installation might be different.

### The system components include:

Component	Description
Browser-based Thin Client	provides a user interface for end users to access the system.
MongoDB	serves as a system data repository.
License Agent	provides services that validate and activate licenses.
Elasticsearch	serves as a full-text search and analytics engine in a distributed multi-user environment.
Redis	provides memory cache for the system.
RabbitMQ	prioritizes and forwards requested tasks.
Web Server	serves static content such as HTML, JavaScript, and CSS resources, which serves as the user interface of the Thin Client.
Web API Server	provides the front-end web applications to support the browser-based Thin Clients and serves RESTful API calls from third-party applications for integration.
Worker Server	serves as a resource manager to support computing tasks. It relies on both Redis and RabbitMQ to work.
Task Engine	coordinates computing tasks.
Front Server Controller	serves to coordinate and communicate with Front Servers and other components.
Front Server	serves as a polling server to collect and parse live network data. It is the only component required to access the live network.
Service Monitor Agent	monitors the health of your NetBrain Servers with operations management of related services.
Ansible Agent (add-on)	integrates with Ansible to define, execute playbooks and visualize results in Change Management Runbooks. See <u>Ansible Integration</u> for more details.
Smart CLI (add-on)	provides a Telnet/SSH client to connect to devices from Windows and can be integrated with NetBrain workflows. See <u>Smart CLI</u> for more details.

# 2. System Requirement

This section introduces the hardware requirements, network connectivity requirements, and more prerequisites for deploying NetBrain system by using a virtual appliance (a pre-configured virtual machine image containing a software stack developed to run on a Hyper-V virtual machine).

- <u>Reference Specification</u>
- <u>Network Connectivity Requirements</u>
- Deployment Prerequisites

# **Reference Specification**

The Hyper-V deployment requires one Windows server for applications and one virtual machine host server for the database.

Environment	NetBrain Component	Machine Count	СРU	Memory	Hard Disk	Operating System
≤1000 nodes ≤10 users	Application Server	1	4 Physical Cores <sup>1)</sup>	16GB <sup>2)</sup>	200GB • HDD <sup>3)</sup> • SSD <sup>5)</sup>	<ul> <li>Windows Server 2012 R2 (Standard/Datacenter Edition), 64-bit</li> <li>Windows Server 2016/2019 (Standard/Datacenter Edition), 64-bit</li> </ul>
	Database Server Appliance	1	4 Physical Cores <sup>1)</sup>	32GB	516GB <sup>6)</sup> • HDD <sup>4)</sup> • SSD <sup>5)</sup>	<ul> <li>Hyper-V Server 2016/2019 (Standard/Datacenter Edition), 64-bit<sup>7)</sup></li> </ul>
1001~2000 nodes ≤10 users	Application Server	1	4 Physical Cores <sup>1)</sup>	32GB <sup>2)</sup>	200GB • HDD <sup>3)</sup> • SSD <sup>5)</sup>	<ul> <li>Windows Server 2012 R2 (Standard/Datacenter Edition), 64-bit</li> <li>Windows Server 2016/2019 (Standard/Datacenter Edition), 64-bit</li> </ul>
	Database Server Appliance	1	4 Physical Cores <sup>1)</sup>	32GB	516GB <sup>6)</sup> • HDD <sup>4)</sup> • SSD <sup>5)</sup>	<ul> <li>Hyper-V Server 2016/2019</li> <li>(Standard/Datacenter Edition),</li> <li>64-bit<sup>7)</sup></li> </ul>

Notes:

<sup>1)</sup> If hyper-threading is enabled, one physical core equals to two logical processors; in a virtual environment, the number of vCPUs required is twice the number of physical cores (as listed in the table).

<sup>2)</sup> Allocating at least half of the RAM amount for swap space on your Linux server is required to provide the necessary additional memory when the RAM space has been exhausted.

<sup>3)</sup>For good performance of data processing and caching, it is recommended to install the Application Server on a machine equipped with Solid State Drive (SSD) when managing up to 5000 nodes.

<sup>4)</sup> The required hard disk space must be exclusively reserved for NetBrain. For better performance, it is recommended to install the MongoDB on a machine equipped with Solid State Drive (SSD), or Hard Disk Drive (HDD) RAID-10.

<sup>5)</sup> If the Intent Based Automation (IBA) license is activated, both Application Server and Database Server must be equipped with Solid State Drive (SSD)

<sup>6)</sup>Increase the values through the virtual machine settings if they are insufficient before starting the virtual machine.

<sup>7)</sup>After the deployment, the target Linux OS version of Database Server is CentOS v7.9.

## **Network Connectivity Requirements**

Source	Destination	Protocol and Port Number *)
Thin Client Service Monitor Agent	Application Server	HTTP/HTTPS (80/443)
Application Server	Database Server	TCP 5672/6379/9200/27017/27654/15672
Application Server	Ansible Agent (add-on)	TCP 9098
Application Server	Live Network	ICMP/SNMP/Telnet/SSH/REST API
Database Server	Application Server	TCP 9099

**Note:** \*) The port numbers listed in this column are defaults only. The actual port numbers used during installation might be different.

## **Deployment Prerequisites**

The following requirements must be satisfied before setting up your NetBrain system:

- The operating system must be installed with an English-language version (not language packs).
- When installing NetBrain servers, comply with your company security policy to set the passwords and archive them for further reference.
- NetBrain servers use hostnames to identify and communicate with each other. Make sure each server has a unique hostname.

- Add all the NetBrain installation folders and files (on both Windows and Linux) to the allow list of antivirus software for routine scans, and keep the TCP connections unblocked between NetBrain components.
- If the machine's firewall is turned on, make sure the firewall rules allow traffics to all the ports and protocols that will be used by the NetBrain system.

### Special Requirements for Client Machine

- It is recommended to deploy the NetBrain Smart CLI on the same machine where the browser-based thin client is used, and the machine needs to meet the following minimum system specifications:
  - 4 Physical CPU Cores (If hyper-threading is enabled, one physical core equals to two logical processors; in a virtual environment, the number of vCPUs required is twice the number of physical cores)
  - ✤ 8GB RAM
- Ensure to reserve at least 50% system capacity for the satisfactory performance of NetBrain Browserbased Thin Client and Smart CLI Application.

### Special Requirements for Windows Server

- Users with administrative privileges of the machine are required to implement the installation.
- NetBrain Integrated Edition should not be installed on the same server as an existing NetBrain Enterprise Edition (6.2 or earlier version), except that Front Server and Network Server (EEv6.2) can be installed on the same machine.
- There must be more than **5GB** free space in the system drive (for example, C drive) to complete the installation no matter which drives the NetBrain system will be installed on.
- Temporarily disable antivirus software during the installation process.
- Ensure the NetBrain installation process using administrator account has the necessary permissions to modify "User Rights Assignment" in "Local Security Policy" or change the local user privileges.
   Otherwise, the following error message will prompt when installing each Windows component.

F9-A1D2-E71E58F40C16}\setPrivileges.log for more details. Do you want to continue the installation?		rivileges. Please refer to Data\Local\Temp\1\{823F	
you want to continue the installation:			re details. Do

 Click 'Yes' to continue with installation/upgrade process and NetBrain service will be configured to run as Local System. If you have security concerns, please click 'No' to abort the installation/upgrade.

**Note:** Local System accounts have additional privileges that are considered a high risk. Please verify that this is an acceptable risk in accordance with your SysAdmin policies.

**Note:** After clicking 'No', please check with your system administration team to enable the relevant permissions, uninstall the affected component(s) and reinstall. Contact NetBrain support team if you need any assistance during the process.

#### • Special Requirements for Linux Server

 $\circ$  Users with root privileges of the machine are required to implement the installation.

# 3. Installing System

The Hyper-V deployment requires one Windows server for applications and one virtual machine for the database. Install the system components in the following order:

- 1. Install NetBrain Database Server on Hyper-V
- 2. Install NetBrain Application Server on Windows

**Note:** The default CPU and memory configured for NetBrain Database Server through the virtual appliance are **8 vCPUs** and **32GB**. You can increase the values through the virtual machine settings if they are insufficient.

Note: Make sure the time on the virtual machine is synchronous with the Internet time server.

**Note:** The messages and logs generated during the virtual appliance configurations are recorded in: **/var/log/netbrain/installationlog/ova**, which can be used for tracing and troubleshooting issues.

## 3.1. Installing NetBrain Database Server on Hyper-V

Note: The following versions of Hyper-V Manager are supported as VM host software:

Hyper-V Manager v10.0.14393.0 (Windows Server 2016)

• Hyper-V Manager v10.0.17763.1 (Windows Server 2019)

**Example:** Install NetBrain Database Server on Windows Server 2016.

- 1. Download the Hyper-V virtual machine image file and save it in your local disk.
- 2. Extract the **netbrain-database-appliance-hyperv-10.0.zip** file to your local disk.
- 3. Import the virtual machine.

1) Launch the Hyper-V virtual machine on Windows Server 2016 and select **Import Virtual Machine**.

V Ma									Actions	
New	>	State	CPU Usage	Assigned Memory	Uptime	Status	Configurati	^	WIN-QA-30130	
Import Virtual Machine		Running	0%	32768 MB	00:10:18		5.0		New	
Hyper-V Settings Virtual Switch Manager Virtual SAN Managen Edit Disk Inspect Disk Stop Service Remove Server Refresh	106	Running Off Off Running Off Off Off Off	0%	3524 MB 10058 MB	2.02:18:15		8,0 8,0 8,0 8,0 8,0 8,0 8,0 8,0 8,0 8,0	Hyper-V Settings	<ul> <li>Virtual Switch Manager</li> <li>Virtual SAN Manager</li> <li>Edit Disk</li> <li>Inspect Disk</li> <li>Stop Service</li> </ul>	
View	> 109	Running	0%	1174 MB	3.05:47:43		8.0	~	🖏 Refresh	
		Publica		25110 1010	2108-01-01		×.0		View	
Help									🕜 Help	
			The selected	virtual machine has no ch	eckpoints.				CentOS	
									📲 Connect	
									Settings	
									Turn Off	
									Ø Shut Down	
									( Save	
									II Pause	
									IÞ Reset	
									🔂 Checkpoint	
									B Move	

o ×

2) On the Before You Begin page, click **Next**.

Import Virtual Machine     Before You		×
Before You Begin Locate Folder Select Virtual Machine Choose Import Type Summary	This wizard helps you import a virtual machine from a set of configuration files. It guides you through resolving configuration problems to prepare the virtual machine for use on this computer.	
	Do not show this page again	
	< <u>Previous</u> <u>Next</u> > Einish Cancel	]

3) On the Locate Folder page, click **Browse**.

Import Virtual Machine		>
Locate Fo	ler	
Before You Begin	Specify the folder containing the virtual machine to import.	
Locate Folder	Folder: E:\netbrain-database-appliance-hyperv-10.0\ Brow	se
Select Virtual Machine Choose Import Type		
Summary		
	< Previous Next > Finish Ca	ncel

4) Select the unzipped virtual machine folder containing folder **Virtual Hard Disks** and **Virtual Machines**, then click **Select Folder**. Click **Next**.

Select Folder							$\times$
$\leftarrow \rightarrow \sim \uparrow$ - This PC	C > SSD-1TB (E:) > netbrain-databa	se-appliance-hyperv-10.0			ٽ ~	Search netbrain-database-ap	P
Organize 🔻 New folder							?
This PC 3 30 Objects Desktop Downloads Music Pictures Videos Local Disk (C.) SSD-1TB (F:) VVM (\\192.168.3;	Name ^	Date modified 4/12/2021 1:06 PM 4/12/2021 1:08 PM	Type File folder File folder	Size			
Folder:							
					[	Select Folder Cano	el

5) On the Select Virtual Machine page, click **Next**.

Import Virtual Machine			>	<
Select Virtual	Machine			
Before You Begin	Select the virtual machine to import:			
Locate Folder	Name		Date Created	
Select Virtual Machine Choose Import Type	netbrain-database-appliance		4/12/2021 10:26:39 AM	
Summary				
		< Previous Next >	Finish Cancel	

6) On the Choose Import Type page, select the **Copy the virtual machine (create a new unique ID)** check box, then click **Next**.

Import Virtual Machine		×
Choose In	nport Type	
Before You Begin Locate Folder Select Virtual Machine Choose Import Type Summary	Choose the type of import to perform: <ul> <li>Register the virtual machine in-place (use the existing unique ID)</li> <li>Restore the virtual machine (use the existing unique ID)</li> <li>Copy the virtual machine (create a new unique ID)</li> </ul>	
	< Previous Next > Finish	Cancel

 On the Choose Destination page, click Next. You can also select the Store the virtual machine in a different location check box to select another location to store the virtual machine files.

Import Virtual Machine		×
Choose Folde	ers for Virtual Machine Files	
Before You Begin Locate Folder Select Virtual Machine Choose Import Type Choose Destination Choose Storage Folders Summary	You can specify new or existing folders to store the virtual machine files. Otherwise, the imports the files to default Hyper-V folders on this computer, or to folders specified in the machine configuration.          Store the virtual machine in a different location         Virtual machine configuration folder:         Ethyperv/         Checkpoint store:         E:\packer\hyperv 760338066\netbrain-database-appliance         Smart Paging folder:         E:\packer\hyperv760338066\netbrain-database-appliance	
	< Previous Next > Finish	Cancel

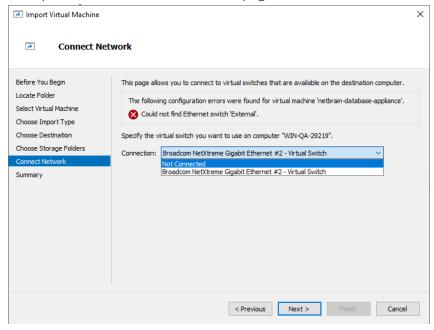
8) On the Choose Storage Folders page, click **Next** to use the default location.

		you want to store	the imported virtual	hard disks for this v	irtual machine?	
ocate Folder elect Virtual Machine hoose Import Type	Location:	E:\hyperv\				Browse
hoose Destination						
hoose Storage Folders onnect Network ummary						

**Note:** Make sure the **Compress contents to save disk space** check box is unselected for all the parent directories of the above target folders.

dvan	aced Attributes	>
¥	Choose the settings you want for this folder.	
¥	When you click OK or Apply on the Properties dialogue, be asked if you want the changes to affect all subfolders files as well.	
Archi	ive and Index attributes	
	- I day to see do fan workt day	
LF	Folder is ready for archiving	
	Allow files in this folder to have contents indexed in addition ile properties	n to
⊡ A fi	Allow files in this folder to have contents indexed in addition	n to
Comp	Allow files in this folder to have contents indexed in addition ile properties	n to

9) (If required) On the Connect Network page, select the available virtual machine to connect.



10)On the Summary page, click **Finish**.

Before You Begin .ocate Folder	You are about to perform the following Description:	operation.	
Select Virtual Machine Choose Import Type Choose Destination Choose Storage Folders Connect Network Summary	Virtual Machine:       netbrain-database-appliance         Import file:       E: \netbrain-database-appliance-hyperv-10.0\Virtual machine configuration folder:         Virtual machine configuration folder:       E: \nyperv\         Checkpoint folder:       E: \nyperv/F00338066\netbrain-database-appliance         Smart Paging file store:       E: \nyperv/F00338066\netbrain-database-appliance         Virtual hard disk destination folder:       E: \nyperv/F00338066\netbrain-database-appliance         Virtual hard disk destination folder:       E: \nyperv/F00338066\netbrain-database-appliance         Virtual hard disk destination folder:       E: \nyperv         Broadcom NetXtreme Gigabit Ethernet #2 - Virtual		
	¢	>	

4. Find the new virtual machine named **netbrain-database-appliance**.

Hyper-V Ma	Virtual Machines									
	Name	State	CPU Usage	Assigned Memory	Uptime	Status	^	^		
	netbrain-database-appliance	Off								

5. Right-click **netbrain-database-appliance**, then select **Start** to launch the virtual machine.

Virtual Machines								
Name	•		State	CPU Usage	Assigned Memory	Uptime	Status	^
CentOS-7Aug-HyperV			Off					
DailyCI_DB2			Running	0 %	14994 MB	7.00:16:35		
DailyCI_DB1_old			Off					
DailyCI_DB1Updated			Running	1 %	36378 MB	7.00:16:32		
DailyCI_DB2_old			Off					=
DailyCI_WinServer			Running	2 %	16384 MB	7.00:19:41		
DailyCl_WinServer_old netbrain-database-appliance			Off					_
Patch_71A_AUTO_DB	Connect		Off Running	0 %	16384 MB	17:21:14		
Patch_71A_AUTO_DB_old	Settings		Saved	0 %	10304 MD	17.21.14		
Patch_71A_AUTO_WINDOWS			Running	0 %	16384 MB	17:24:09		
	Start			0.4	100041110	17.24.00		~
<	Checkpoint							>
Checkpoints	Move							۲
	Export							
	Rename	elected virtual m	achine has no o	checkpoints.				
	Delete							
	Enable Replication							
	Help							

6. Right-click **netbrain-database-appliance** and then click **Connect** to log in the virtual machine. The disk, memory, and CPU have been pre-allocated.

CentOS Linux 7 (Core) Kernel 3.10.0-1160.el7.x86\_64 on an x86\_64 netbrain-data-server login: \_

7. Enter the username **root** and the default password **admin** at the console to log in to the NetBrain Database Server.

Tip: It is highly recommended to change the password after completing the configuration.

```
CentOS Linux 7 (Core)
Kernel 3.10.0-1160.el7.x86_64 on an X86_64
netbrain-data-server login: root
Password:
Last Login: Tue Apr 13 12:33:05 on tty1
[root@netbrain-data-server ~]#
```

- 8. Configure a static IP address for NetBrain Database Server as follows:
  - 1) Run the *ifconfig* command to find your network interface name. In the following example, the network interface name is **eth0**.

**Example:** 

```
[root@netbrain-data-server ~]# ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
       inet6 fe80::e80:8f64:655c:4c32 prefixlen 64 scopeid 0x20<link>
       ether 00:0c:29:6e:55:29 txqueuelen 1000 (Ethernet)
       RX packets 124 bytes 8200 (0.0 KiB)
       RX errors 0 dropped 0 overruns 0 frame 0
       TX packets 13 bytes 2334 (2.2 KiB)
       TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
        inet 127.0.0.1 netmask 255.0.0.0
        inet6 ::1 prefixlen 128 scopeid 0x10<host>
        loop txqueuelen 1 (Local Loopback)
        RX packets 0 bytes 0 (0.0 B)
        RX errors 0 dropped 0 overruns 0 frame 0
        TX packets 0 bytes 0 (0.0 B)
        TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

 Run the vi /etc/sysconfig/network-scripts/ifcfg-<interfacename> command to edit the configuration file of the network interface and save the changes. The **<interfacename>** is the network interface name you found in step 1). For how to modify the configuration file, refer to Editing a File with VI Editor.

Example: vi /etc/sysconfig/network-scripts/ifcfg-eth0

```
DEVICE="eth0"

IPV6INIT="yes"

BOOTPROTO="static"

UUID=8c9772d4-99cd-4fb6-bf8a-c6d808ada124

ONBOOT="yes"

ZONE=public

IPADDR=10.10.3.142

PREFIX=22

GATEWAY=10.10.7.254

DNS1=10.10.10.7
```

- 3) Run the systemctl restart network command to restart the network service.
- 4) Run the *ifconfig* command to check whether the IP configuration takes effect. If it does not take effect, reboot the server and then run the *ifconfig* command to check the IP configuration again.
- 9. Create a snapshot of the virtual machine so you can always start over again if anything goes wrong in the following steps.
- 10. Run the ./configure\_netbrain.sh command under the **/root** directory to configure NetBrain Database Server components.
  - 1) Read the license agreement, and then type **YES** and press the **Enter** key.
  - 2) Type I ACCEPT and press the Enter key to accept the license agreement.

[root@netbrain-data-server ~]# ./configure netbrain.sh Please read the End User License Agreement ("EULA") for the license type (perpetual or subscription) purchased in the order form at https://www.netbraintech.com/legal-tc/ carefully. I have read the subscription EULA, if I have purchased a subscription license, or the perpetual EULA, if I have purchased a perpetual license, at the link provided above. Please type "YES" if you have read the applicable EULA and understand its and understand its contents, or "NO" if you have not read the applicable EULA. [YES/NO]: YES Do you accept the terms in the subscription EULA, if you have purchased a subscription license, or the perpetual EULA, if you have purchased a perpetual license? If you accept, and to continue with the installation, please type "I Accept" to continue. If you do not accept, and to quit the installation script, please type "CANCEL" to stop. [I ACCEPT/CANCEL]: I ACCEPT

3) Configure the following <u>parameters</u> of NetBrain Database Server one by one with the interactive command line.

```
Install NetBrain Linux components.
The values in brackets are the default values of the parameters. To keep the default value
for the current parameter, press the Enter key.
Please enter the IP address of this machine [10.10.3.142]:
```

Please create NetBrain service name [admin]: Please create NetBrain service password: Please re-enter NetBrain service password to confirm: Use SSL on NetBrain Services [no]: YES Please enter the name and storage path of the certificate file that contains the public key:/etc/ssl/cert.pem Please enter the name and storage path of the private key file:/etc/ssl/key.pem Please enter the name and storage path of the Certificate Authority file:/etc/ssl/godaddychain-ca.crt Use customized server ports? [no] YES Please enter MongoDB port [27017]: 27018 Please enter License Agent port [27654]: 27655 Please enter Elasticsearch port [9200]: 9201 Please enter Rabbitmq port [5672]: 5673 Please enter Redis port [6379]: 6380 Please enter the URL (must end with /) to call NetBrain Web API service for the Service Monitor [http(s)://<IP address or hostname of NetBrain Application Server>/]: https://10.10.3.141/

Note: For more password criteria, please refer to: <u>NetBrain Service Password</u>.

**Note:** You must keep notes of the user name and password because it will be used for validating the connections with:

- MongoDB, Elasticsearch, RabbitMQ, and Redis when installing NetBrain Application Server

- Front Server Controller when setting up the system
- Service Monitor Agent when communicating with Web API Server

**Note:** The credentials are required when you reconfigure the components.

 After these parameters are configured, the key configurations for each component are listed for your further confirmation. To continue the installation with the current configurations, press the Enter key. To change any configurations, type no.

Note: The configure\_netbrain.sh file can be executed multiple times to reconfigure any of the following parameters: •Binding IP address •Port •Username/ Password •Enable/ Disable SSL •Replace certificates

**Note:** In the beginning of reconfiguration, the system will prompt you to enter the existing username and existing password. After the validation, follow <u>Configuring the parameters of NetBrain Database Server</u>.

MongoDB IP address:	10.10.3.142
MongoDB port:	27018
MongoDB username:	admin

MongoDB password:	*****
MongoDB uses SSL:	ves
Certificate path:	/etc/ssl/cert.pem
Key path:	/etc/ssl/key.pem
Certificate Authority path:	/etc/ssl/godaddychain-ca.crt
License Agent port:	27655
License Agent uses SSL:	yes
Elasticsearch address:	10.10.3.142
Elasticsearch port:	9201
Elasticsearch username:	admin
Elasticsearch password:	*****
Elasticsearch uses SSL:	yes
RabbitMQ address:	10.10.3.142
RabbitMQ port:	5673
RabbitMQ username:	admin
RabbitMQ password:	* * * * * *
RabbitMQ uses SSL:	yes
Redis address:	10.10.3.142
Redis port:	6380
Redis password:	*****
Redis uses SSL:	yes
NetBrain Web API service URL:	https://10.10.3.141/ServicesAPI
De unit he continue in t	
Do you want to continue using t	mese parameters? [yes]

11. Run the following commands to verify the status of MongoDB, License Agent, Elasticsearch, RabbitMQ, Redis, and Service Monitor Agent individually.

```
- systemctl status mongod
```

```
[root@netbrain-data-server ~]# systemctl status mongod
mongod.service - MongoDB service
Loaded: loaded (/usr/lib/systemd/system/mongod.service; enabled; vendor preset: disabled)
Active: active (running) since Tue 2021-04-13 23:19:10 EDT; 2min 4s ago
Main PID: 28840 (mongod)
Memory: 48.9M (limit: 17.1G)
...
```

- systemctl status netbrainlicense

```
[root@netbrain-data-server ~]# systemctl status netbrainlicense
netbrainlicense.service - NetBrain license agent service
Loaded: loaded (/usr/lib/systemd/system/netbrainlicense.service; enabled; vendor preset:
disabled)
Active: active (running) since Tue 2021-04-13 23:19:10 EDT; 2min 4s ago
Main PID: 29479 (licensed)
Memory: 5.7M
...
```

- systemctl status elasticsearch

```
[root@netbrain-data-server ~]# systemctl status elasticsearch
elasticsearch.service - Elasticsearch
Loaded: loaded (/usr/lib/systemd/system/elasticsearch.service; enabled; vendor preset:
disabled)
Active: active (running) since Tue 2021-04-13 23:19:10 EDT; 2min 4s ago
Docs: <u>http://www.elastic.co</u>
Main PID: 29722 (java)
Memory: 8.1G
...
```

```
-systemctl status rabbitmq-server
```

```
[root@netbrain-data-server ~]# systemctl status rabbitmq-server
rabbitmq-server.service - RabbitMQ broker
Loaded: loaded (/usr/lib/systemd/system/rabbitmq-server.service; enabled; vendor preset:
disabled)
Active: active (running) since Tue 2021-04-13 23:19:20 EDT; 2min 58s ago
Main PID: 30104 (beam.smp)
Status: "Initialized"
Memory: 148.9M
...
```

- systemctl status redis

```
[root@netbrain-data-server ~]# systemctl status redis
redis.service - Redis
Loaded: loaded (/usr/lib/systemd/system/redis.service; enabled; vendor preset: disabled)
Active: active (running) since Tue 2021-04-13 23:19:01 EDT; 3min 27s ago
Main PID: 30751 (redis-server)
Memory: 13.7M
...
```

- systemctl status netbrainagent

```
[root@netbrain-data-server ~]# systemctl status netbrainagent
netbrainagent.service - NetBrain Service Monitor Agent Daemon
Loaded: loaded (/usr/lib/systemd/system/netbrainagent.service; enabled; vendor preset:
disabled)
Active: active (running) since Tue 2021-04-13 23:19:09 EDT; 5min ago
Main PID: 30837 (python3)
Memory: 115.2M
...
```

### **Parameters**

Refer to the following table for the parameters of NetBrain Database Server.

Parameter	Default Value	Description
	address automatically obtained from the	The binding IP address for MongoDB/ElasticSearch/NetBrain License Agent. It will be used for establishing connections with NetBrain Application Server. You can press the <b>Enter</b> key to keep the default value or type a new one.

Parameter	Default Value	Description
		Note: 127.0.0.1 is not supported.
		<b>Note:</b> If you configured multiple network cards on this machine, type the designated IP address to be bound.
NetBrain service username	admin	The admin username and password created for MongoDB, Elasticsearch, RabbitMQ, Redis, Front Server and Service Monitor.
NetBrain service password		<ul> <li>Note: The password must meet the following criteria:</li> <li>The length should be not less than 8 and not greater than 64 characters.</li> <li>Cannot be Admin1.#</li> <li>Cannot be empty and cannot start with! or #.</li> <li>Cannot contain any of the following special characters, <ol> <li>[]: ", '  &lt;&gt; @ &amp; ^ % \ and spaces.</li> </ol> </li> <li>Note: The username must meet the following criteria:</li> </ul>
		<ul> <li>The length cannot exceed 64 characters.</li> <li>Cannot be empty and cannot start with! or #.</li> <li>Cannot contain any of the following special characters,</li> <li>{ } [ ] : " , '   &lt; &gt; @ &amp; ^ % \ and spaces.</li> </ul> Note: Keep notes of the NetBrain service username and password
		because they will be used for validating the connections with: - MongoDB, Elasticsearch, RabbitMQ, and Redis when installing NetBrain Application Server - Front Server Controller when setting up the system - Service Monitor Agent when communicating with Web API Server
NetBrain existing username		During the reconfiguration, you need to fill out the existing username and password.
NetBrain existing password		
Use SSL on NetBrain Services	no	Whether to enable SSL for all components on NetBrain Database Server. To enable SSL, type <b>yes</b> .
		<b>Note:</b> SSL cannot be enabled or disabled separately for each Linux component in the combined OVA deployment mode.
Certificate file path		The file name of the certificate file that contains the public key. <b>Note:</b> It is required only if <b>Use SSL on NetBrain Services</b> is enabled.
Private Key file path		The file name of the private key file. <b>Note:</b> It is required only if <b>Use SSL on NetBrain Services</b> is enabled.

Parameter	Default Value	Description
Certificate Authority file path		The name and directory of the chain certificate authority (CA) file, which is used to authenticate the CA issuing the SSL certificates. <b>Note:</b> It is required only if <b>Use SSL on NetBrain Services</b> is enabled.
Use customized server ports?	no	Whether to use customized port number for each Linux component. To customize ports, type <b>yes.</b>
MongoDB port	27017	The port number that the MongoDB service listens to. You can press the <b>Enter</b> key to keep the default port or type a new one.
		<b>Note:</b> Make sure the port is not used by other applications. <b>Note:</b> Keep notes of the customized port because it will be used for validating the connections with MongoDB when installing NetBrain Application Server.
License Agent port	27654	The port number that the License Agent service listens to. You can press the <b>Enter</b> key to keep the default port or type a new one.
		<b>Note:</b> Make sure the port is not used by other applications. <b>Note:</b> Keep notes of the customized port because it will be used for validating the connections with License Agent when installing NetBrain Application Server.
Elasticsearch port	9200	The port number that the Elasticsearch service listens to. You can press the <b>Enter</b> key to keep the default port or type a new one.
		<b>Note:</b> Make sure the port is not used by other applications.
		<b>Note:</b> Keep notes of the customized port because it will be used for validating the connections with Elasticsearch when installing NetBrain Application Server.
Rabbitmq port	5672	The port number that the RabbitMQ service listens to. You can press the <b>Enter</b> key to keep the default port or type a new one.
		<b>Note:</b> Make sure the port is not used by other applications.
		<b>Note:</b> Keep notes of the customized port because it will be used for validating the connections with RabbitMQ when installing NetBrain Application Server.
Redis port	6379	The port number that the Redis service listens to. You can press the <b>Enter</b> key to keep the default port or type a new one.
		<b>Note:</b> Make sure the port is not used by other applications.
		<b>Note:</b> Keep notes of the customized port because it will be used for validating the connections with Redis when installing NetBrain Application Server.

Parameter	Default Value	Description
URL to call NetBrain Web API service for the Service Monitor	http(s):// <ip address or hostname of NetBrain Application Server&gt;/</ip 	The URL to call NetBrain Web API service. For example, http://10.10.3.141/ or https://www.YOURCOMPANY.com/. Note: If SSL will be enabled with https binding created for the system website in IIS Manager, type https in the URL. Note: When you type https in the URL, the CA verification will not be performed during the configuration by default. To verify the CA certificate, complete the following steps after the configuration: 1) Run the cd /etc/netbrain/nbagent command to navigate to the /etc/netbrain/nbagent directory. 2) Run the vi agent.conf command to edit the agent.conf file as follows and save the changes. For more details on how to edit the file with the vi editor, refer to Editing a File with VI Editor. <ul> <li>Modify the value of the enable_ssl_validation parameter to True.</li> <li>Remove the pound sign (#) in front of the cert_path parameter, and then enter the path of the CA certificate file. Example: <ul> <li># enable ssl validation: True cert_path: /etc/ssl/smca.pem</li> </ul> 3) Upload the CA certificate file under the specified path. Make sure the CA certificate could be accessed and read by the Service Monitor Agent Service.</li></ul>

# 3.2. Installing NetBrain Application Server on Windows

All NetBrain Windows components, including Web Server, Web API Server, Worker Server, Task Engine, Front Server Controller, Front Server, and Service Monitor Agent will be installed sequentially on this Windows server.

# **Pre-installation Tasks**

- Make sure the extended memory of your machine is larger than **16GB** and the Windows update is of the latest.
- Make sure the language of the operating system is English.
- Remove the Existing Internet Information Services (IIS) and disable the FIPS setting by modifying the
   Enabled value to 0 under the

HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Control\Lsa\FipsAlgorithmPolicy directory of

Windows registry.

۵¢		Registry Editor	
File Edit View Favorites Help			
File     Edit     View     Favorites     Help       Image: State Stat	Name (Default) Enabled Value name: Enabled Value data: D	Type REG_SZ REG_DWORD Edit DWORD (32-bi	Data (value not set) 0x0000000 (0) t) Value X xadecimal
→ MSV1_0 → SConfig → Skew1 ▷ → SSO ▷ → SSD		O Der	cimal Cancel

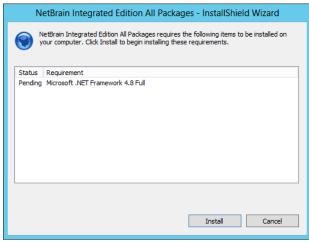
- If you use a proxy server to access the Internet on this server, you must add the IP address of Elasticsearch into the proxy exception list so that the Application Server can communicate with the Elasticsearch.
  - 1) Click the i icon at the upper-right corner of Chrome and select **Settings > Advanced**.
  - 2) In the **System** area, click **Open proxy settings**.
  - 3) On the **Connections** tab, click **LAN settings**.
  - 4) In the **Proxy Server** area, click **Advanced** to add the IP address and port number of Elasticsearch into the **Exceptions** area.
- If you are using a virtual machine, make sure the time of the virtual machine is synchronous with the Internet time server.

## **Installing Application Server**

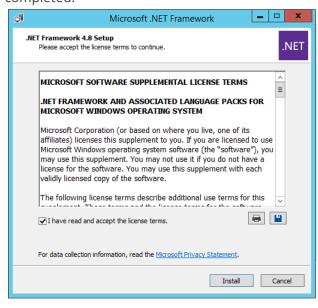
Complete the following steps with administrative privileges.

- 1. Download the **netbrain-all-in-two-windows-x86\_64-10.0.zip** file and save it in your local folder.
- 2. Extract files from the **netbrain-all-in-two-windows-x86\_64-10.0.zip** file.
- Navigate to the netbrain-all-in-two-windows-x86\_64-10.0 folder, right-click the netbrain-application-10.0.exe file and then select Run as administrator to launch the Installation Wizard.
- 4. Follow the Installation Wizard to complete the installation step by step:
  - 1) .NET Framework 4.8 must be pre-installed on this machine before you install the Application Server. The Installation Wizard will automatically check this dependency. If it has not been installed, the wizard will guide you through the installation as follows; if it has been installed, the wizard will directly go to step 2).

a) Click Install.



b) Read the license agreement of Microsoft .NET Framework 4.8, select the I agree to the license terms and conditions check box and click Install. It might take a few minutes for the installation to be completed.



**Note:** Some running applications must be closed during the installation of .NET Framework 4.8, such as Server Manager.

c) You must click **Restart** to restart the machine immediately. Otherwise, the upgrade will fail due to the failure of upgrading the new .Net Framework. After the machine reboots, continue with step 2).

I Microsoft .NET Framework		-		×	
Installation Is Con	nplete				
.NET Framework 4.8 has been ins	talled.				
Check for more recent versions or	Windows Update.				
	Microsoft .NET Framework				
	You must restart your computer Restart Later, applications depe working.				
	Restart <u>N</u> ow		Rest	tart <u>L</u> ater	
			Finis	sh	

**Note:** Ensure the FIPS is disabled after restarting the machine. To disable the FIPS setting, modify the **Enabled** value to **0** under the **HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Control\Lsa\FipsAlgorithmPolicy** directory of Windows registry.

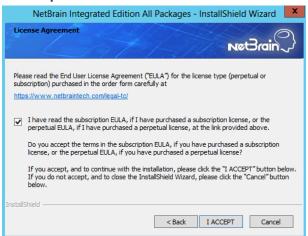
**Note:** The interface above may not appear if the .NET Framework has never been installed on the server. In such case, it is still highly recommended to reboot the server after the installation of the .NET Framework completes.

- 2) On the Welcome page, click **Next**.
- 3) On the NetBrain Integrated Edition Prerequisites page, read the list of Linux components that must be deployed beforehand in your environment and click **Next**.

	NetBrain Integrated Edition All Packages - InstallShield Wizard	x
Ne	tBrain Integrated Edition Prerequisites	$\langle \rangle$
	NetBrain Integrated Edition requires that the following components be deployed in your environment.	
	Dn Linux Server (s): MongoDB Server or its Cluster Elasticearch or its Cluster RabbitMQ or its Cluster Redis or its Cluster NetBrain License Agent Server	
	<	¥
Instal	Ishield <back next=""> Cancel</back>	

4) On the System Configuration page, review the system configuration summary and click **Next**.

5) On the License Agreement page, read the license agreement, and then select the **I have read the subscription EULA** check box and click **I ACCEPT**.



- 6) On the Customer Information page, enter your company name and click **Next**.
- 7) Click **Next** to install the Application Server under the default path: **C:\Program Files\NetBrain\**. If you want to install it under another location, click **Change**.

**Note:** If you select to install it under another drive, make sure there are no spaces in the installation path. For example, use **D:\Program\_Files\** instead of **D:\Program Files\**.

Note: Make sure the designated data folder has more than 100GB free space.

8) On the System Connectivity Configuration page, enter the information to connect to NetBrain Database Server, including the IP of NetBrain Database Server and the service username and password created on NetBrain Database Server. Click **Next**.

NetBrain Integrated	Edition All Packages - InstallShield	Wizard 🗙
System Connectivity Config		Brain
	n information of NetBrain Service. The username NetBrain Front Server Controller, Web API server Jate Server.	
🗯 Linux Server IP:	172.16.1.117	]
🔹 NetBrain Service Username:	admin	]
🔹 NetBrain Service Password:		]
	✓ Use Customized Ports	
	Use SSL	
Validation Timeout (seconds): InstallShield	30	
	< Back Next >	Cancel

**Note:** If you enabled SSL on NetBrain Database Server, you must select the **Use SSL** check box here. Both NetBrain Database Server and NetBrain Application Server must use the same set of SSL certificate files.

**Note:** Select the **Use Customized Ports** check box only if you customized a port number for any of Linux components during the installation of NetBrain Database Server.

9) (Required only if the **Use Customized Ports** check box is selected) On the Customized Settings page, you can customize the ports of Linux Components and customize the port for Front Server Controller if you don't want to use the default port 9095. Click **Next**.

NetBrain Integrated E	dition All Packages - InstallShield Wizard 💌
Customized Settings	0
E ( 19)	Net Brain ~
Modify the following settings for	or each component only if they are customized.
MongoDB Port: 27017	Replica Set Name: Is
License Agent Port: 27654	RabbitMQ Port: 5672
Elasticsearch Port: 9200	Redis Port: 6379
Front Server Controller Port: 9095	
InstallShield	
	< Back Next > Cancel

NetBrain Application Server will use the specified information of NetBrain Database Server, including IP address, username, password, SSL Settings, and port settings to validate the connectivity to MongoDB, License Agent, Elasticsearch, RabbitMQ, and Redis one by one.

10)On the Auto Update Server, enter the information for Auto Update Server and click **Next**.

NetBrain Integ	rated Edition All Packages - InstallShield Wizard 🎴
Auto Update Server	NetBrain?
IP address of this m	
Address: Port:	
InstallShield	
	< Back Next > Cancel

**Note**: The Address must be the local server's IP address which can be reached from other NetBrain servers including Front Server.

11)(Required only if the Use SSL check box is selected) Configure the following SSL settings.

a) On the Certificate Authority Configuration page, to validate the Certificate Authority (CA) of the SSL certificates used on NetBrain Database Server, select the **Conduct Certificate Authority verification** 

check box (optional) and click **Browse** to upload the chain certificate file. Click **Next**.

NetBrain Integrated Edition All Packages - InstallShield Wizard 💌
Certificate Authority Configuration
Please enter the Certificate Authority information.
Conduct Certificate Authority verification
Certificate Authority path:
C:\Users\Administrator\Desktop\SSLCerts\ca.pem Browse
InstallShield
< Back Next > Cancel

b) On the Certificate Configuration page, click **Browse** to upload the certificate file and private key file to enable SSL communications on Front Server Controller and Auto Update Server. Click **Next**.

NetBrain	Integrated Edition All Packages - InstallShield Wizard
Certificate Cor	nfiguration
	Net Brain ~}
	Please enter the Certificate information.
🛨 Certificate:	C:\Users\Administrator\Desktop\SSLCerts\cert.pem Browse
🕈 Private Key:	C:\Users\Administrator\Desktop\SSLCerts\key.pem Browse
InstallShield	<back next=""> Cancel</back>
	N Back Next > Caliber

12) On the KeyVault Administration Passphrase Settings page, create a passphrase to initialize and manage the system KeyVault which contains all encryption keys to protect data security. Type it twice and click

Next.
NetBrain Integrated Edition All Packages - InstallShield Wizard
KeyVault Administration Passphrase Settings
CAUTION: This passphrase is not stored in the product and CANNOT be recovered by ANY means. NeBrain STRONGLY recommends storing this passphrase in your company's password vault application. If you lose or forget this passphrase you will have to reinstall this product to gain access to the KeyVault, however this will result in the loss of all your data.
Please enter the KeyVault Administration Passphrase (KVAP).
★ KVAP ●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●
+ Re-enter KVAP: ●●●●●●●●●●
WARNING: There is a feature that would allow an Administrator, working with NetBrain technical support to perform a KVAP reset to restore access. By checking the "Enable
Reseting KVAP'' checkbox below, you will enable this feature. Once activated, this feature CANNOT be deactivated without re-installing the product.
Enable Resetting KVAP InstallShield
< Back Next > Cancel

**Tip:** The passphrase must contain at least one uppercase letter, one lowercase letter, one number, and one special character, and the minimum permissible length is 8 characters. All special characters except for the quotation mark (") are allowed.

**Note:** Keep notes of the passphrase because it is required when you scale up or upgrade the Application Server. In case of losing the passphrase, select the **Enable Resetting KVAP** check box so that NetBrain system administrator can reset the passphrase at any time.

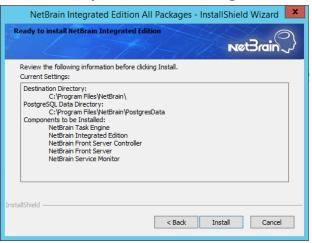
13) On the NetBrain Front Server page, create a password for the PostgreSQL data. Type it twice and click

#### Next.

Net	Brain Integrated	Edition All Packages - InstallShield Wizard	
NetBrain	Front Server	NetBrain?	
Please s	Choose folder to sa	L information for Front Server. ave PostgreSQL data. IetBrain\PostgresData Change	
* InstallShield –	User Name:	postgres	
ני וסינסויסן ווכוע –		< Back Next > Cancel	

**Note**: If you want to save the PostgreSQL data under another location, click **Change**. **Note**: Make sure the designated data folder has more than **180GB** free space.

14)Review the server components to be installed and click **Install**. All the Windows components will be installed one by one. It will take a long while for all the components to be installed.



**Note:** Depending on the hard drive type of the Application Server, the entire installation process may take approximately 1hour (SSD) to 2.5 hours (HDD). Please expect the lengthy installation process and refrain from interrupting it.

 Ensure the NetBrain installation process using administrator account has the necessary permissions to modify "User Rights Assignment" in "Local Security Policy" or change the local user privileges. Otherwise, the following error message will prompt when installing each Windows component.



 Click 'Yes' to continue with installation/upgrade process and NetBrain service will be configured to run as Local System. If you have security concerns, please click 'No' to abort the installation/upgrade.

**Note:** Local System accounts have additional privileges that are considered a high risk. Please verify that this is an acceptable risk in accordance with your SysAdmin policies.

**Note:** After clicking 'No', please check with your system administration team to enable the relevant permissions, uninstall the affected component(s) and reinstall. Contact NetBrain support team if you need any assistance during the process.

- 5. After all the components are successfully installed, click **Finish** to complete the installation process and exit the Installation Wizard.
- 6. Open the Task Manager and navigate to the **Services** panel, you can find the following running NetBrain services.

P	Task Manager				x
File Options View					
Processes Performance Users	Details	Services			
Name	PID	Description	Status	Group <sup>▲</sup>	^
🔍 NetBrainAgent	5684	NetBrain Agent Service	Running		
NetBrainFrontServer		NetBrain Front Server Service	Stopped		=
NetBrainFrontServerControl	4152	NetBrain Front Server Controller	Running		
NetBrainKCProxy	4912	NetBrain KCProxy Service	Running		
NetBrainWorkerServer	3136	NetBrain Worker Server	Running		
NetBrainTaskEngine	2888	NetBrain Task Engine Service	Running		

Tip: The NetBrainFrontServer service is not running because Front Server has not been registered.

# 4. Setting Up Your System

Complete the following steps to set up your system:

- 1. Log in to System Management Page.
- 2. Activate Your License.
- 3. Create System Users Accounts.
- 4. Allocate the Tenant to a Front Server Controller.
- 5. Add a Front Server to the Tenant.
- 6. <u>Register the Front Server</u>.
- 7. Configuring Auto Upgrade Settings.
- 8. Monitor Server and Service Metrics.

**Note:** The system is designed to work with a minimum screen resolution of 1440x900 pixels. Make sure the Notifications and Popups are allowed for the Web Server URL in your web browser and zoom it at 100% to get the best view.

Secure   https://	Secure https://	
Secure connection × Your information (for example, passwords or credit card numbers) is private when it is sent to this site. Learn more	Secure connection Your information (for example card numbers) is private wher <u>Learn more</u>	
<ul> <li>Cookies 17 in use</li> <li>Location</li> <li>Ask (default) ▼</li> <li>Camera</li> <li>Ask (default) ▼</li> <li>Microphone</li> <li>Ask (default) ▼</li> <li>Microphone</li> <li>Ask (default) ▼</li> <li>Notifications</li> <li>Allow √</li> <li>JavaScript</li> <li>Allow (default) ▼</li> <li>Flash</li> <li>Ask (default) ▼</li> <li>Flash</li> <li>Ask (default) ▼</li> <li>Flash</li> <li>Ask (default) ▼</li> <li>Allow (default) ▼</li> <li>Popups</li> <li>Background Sync</li> <li>Allow (a Use g ✓ Allow (a Use g</li> </ul>	Cookies 17 in use Location Camera Microphone Microphone Notifications JavaScript Flash Images Popups Automatic Downloads MIDI devices full control	Ask (default) Ask (default) Ask (default) Allow Allow Allow ( Allow v Allow ( Allow this site Ask (c Allow v Allow (default) v
Site settings	Site settings	

## 4.1. Logging in to System Management Page

- In your web browser, navigate to http(s)://<Hostname or IP address of NetBrain Application Server>/admin.html. For example, https://10.10.3.141/admin.html or http://10.10.3.141/admin.html.
- 2. In the login page, enter your username or email address, and password. The initial username/password is **admin/admin**.
- 3. Click Log In.
- 4. Modify your password first and then complete your user profile in the pop-up dialog, by entering the email address, first name, and last name, and then click **Save**.

# 4.2. Activating a Subscription License

- 1. In the System Management page, click **Activate** under the **License** tab. The activation wizard prompts.
- 2. Activate your subscription license:
  - 1) Select Activate Subscription License and click Next.
  - 2) Enter the license ID and activation key that you received from NetBrain, with your first name, last name, and email address.
  - 3) Select the activation method based on your situation.
    - **Online** (recommended) click **Activate** to connect to NetBrain License Server and validate your license information immediately.

**Note:** If your NetBrain Web/Web API Server is not allowed to access the Internet, you can configure a proxy server. Click the <sup>(3)</sup> icon at the upper-right corner, select the **Use a proxy server to access the internet** check box and enter the required information.

• Via Email — validate your license information by sending an email to NetBrain.

**Note:** Only use this activation method when your NetBrain Web/Web API Server is not allowed to access the Internet.

a) Follow the instructions to generate your license file. Attach the file to your email and send it to <u>NetBrain Support Team</u>. After receiving your email, the NetBrain team will fill in the license

information on NetBrain License Server and generate the corresponding activation file, and then send it back to you.

- b) Click **Browse** to select the activation file that you received from the NetBrain team, and then click **Activate**.
- 4) A message box will prompt you the subscription license has been activated successfully. Click **OK**.
- 3. A confirmation dialog box prompts to ask you whether to generate an initial tenant. Click **Yes** and the initial tenant will be created automatically with all purchased nodes assigned.

### 4.3. Creating User Accounts

**Tip:** To synchronize authenticated user accounts that are managed in third-party user management servers, refer to <u>Third-Party User Authentication</u>.

To manually create a user account, do the following:

- 1. In the System Management page, select the **User Accounts** tab.
- 2. Click **Add** at the upper-left corner, and complete the settings. This is an example:

asic Information		User P	Privilege					
Authentication Source:	NetBrain 🗸		tem Administrator (	Highest Privilege)				
		-	ndard User					
* Email:	jenjuchao@rectinan.com		System Managemen Jser Management	t				
* First Name:	jerry	() Por	tal User 🚯					
	Jena	4 7	ints, 1 Domains Se	1				
* Last Name:	chao	1 Tena	ints, 1 Domains Se			Search	۹	G Refres
			Tenant Access	Tenant Admin	Allowed to Create Domain	Domain Access	Domain Pr	ivileges
* Username:	jerryC 🚯	4	BVT_DB1TEN_hI	u! O	0			
* Password:						BVT_DB1DOM_1	m	
						🗹 jerrySmartCLI	1 role	
Confirm Password:								
Phone Number:								
Phone Number:								
Department:	~							
Description:	Enter text							
lvanced Settings								
Expired after	i 12:00 ∨ AM ∨							
Allow users to change	their own passwords							
							_	
							Cancel	Submit

- 1) Enter basic information. The fields marked with asterisks are mandatory.
- 2) Assign user rights, including access permissions and user roles. See <u>online help</u> for more details.

**Note:** For authenticated users account from external servers (LDAP/AD/TACACS+), their roles and privileges can be locked as follows. After being locked, the roles and privileges will not be synced with any changed settings of <u>external authentication</u>.

Edit User			
Basic Information	NetbrainAD_USQA	×	User Privilege Unlock Lock
Addrended for Sourcer	Netoralityo_050X	Ť	Standard User
* Email:	sheolihue@netbrain.com		✓ System Management User Management
* First Name:	Ifue		🔿 Portal User 🚯

- 3) Configure the advanced settings if required, including account expiration and privilege to modify/reset password.
- 3. Click **Submit**. The user account will be added to the Existing User List.

# 4.4. Allocating Tenants to Front Server Controller

- In the System Management page, select the Front Server Controllers tab, and then click Add Front Server Controller.
- 2. In the **Add Front Server Controller** dialog, configure the settings for the Front Server Controller, and then allocate tenants to it.

1) Select the deployment mode, and then specify the basic information about the Front Server Controller. See <u>FSC Settings</u> for more details.

Add Front Server Controller						×
Deployment Mode: Standalor	ne 🔹					
Front Server Controller Settings:		Allocate	d Tenants:			
▲ Front Server Controller			Tenant Name	Dedicated Fro	ont Server Contr	oller
*Name:	FSC		Initial Tenant			
*Hostname or IP Address:	10.10.3.141					
*Port:	9095					
*Username:	admin					
*Password:						
Timeout:	5 Seconds					
Description:						
▷ SSL Settings						
				Cancel	Test	ОК

- **Standalone** applicable to a single Front Server Controller deployment.
- **Group** applicable to a failover deployment of Front Server Controller.
- 2) Configure the SSL settings.
  - a) If SSL is enabled on Front Server Controller, select the **Use SSL** check box to encrypt the connections established from the Worker Server and Front Server with SSL. Otherwise, leave it unchecked.
  - b) To authenticate the Certificate Authority (CA) certificate on the Front Server Controller, select the **Conduct Certificate Authority verification** check box.
  - c) If CA has not been installed on the Worker Server and Task Engine, click **Browse** to upload the CA file, for example, **ca.pem**.

Note: Only certificates in the Base-64 encoded X.509 PEM format are supported.

- 3) Click **Test** to verify whether the Web API Server can establish a connection to Front Server Controller with the configurations.
- 4) In the **Allocated Tenants** area, select the target tenants to allocate them to the controller.
- 5) Click **OK** to save the settings.

The Front Server Controller is added.

+ Add Front Server Controller								😋 Refresh
Search	۹	Front Server Control	Hostname or IP	Port	Username	Description	Tenants	Status
🛥 🔄 FSC	Connected	FSC	10.10.3.141	9095	netbrain		Initial Tenant	Connected
Initial Tenant								

### Front Server Controller Settings

The following items (except **Timeout** and **Description**) are required to be consistent with those configured during the installation of NetBrain Application Server.

Field	Description
Name	Keep the default value <b>FSC</b> as it is.
Hostname or IP Address	Enter the IP address of NetBrain Application Server.
Port	The port number created when you install the Front Server Controller for listening to the connections from Worker Server. By default, it is <b>9095</b> .
Username	The user name created for NetBrain service when installing NetBrain Database Server.
Password	The password created for NetBrain service when installing NetBrain Database Server
Timeout	The maximum waiting time for establishing a connection from Worker Server to this Front Server Controller. By default, it is <b>5</b> seconds.
Description	The brief description to help you add more information about the Front Server Controller.

### 4.5. Adding a Front Server for a Tenant

1. In the Front Server Controller Manager, select the target tenant and click **New Front Server**.

Sy	stem Management							Operations	<b>±</b>	Log Out	enEtern 🔊
	Home Page $\times$ License $\times$	Tenants × Use	r Accounts X Pr	oxy Manager 🛛 🗙 🛛 Fro	ont Server Controllers	× Email Settings	× Advanced Setting	5 ×			
	+ Add Front Server Controller										🔓 Refresh
	Search	Q	+ New Front Server								
	🔺 🧮 FSC	Connected	ID	Registered	Front Server Hostnam	IP Address	Proxy	Version		Status	
	🖻 👝 Initial Tenant										

2. Enter the following properties of the Front Server.

Add Front Server			>	×
The Front Server ID and you register this Front		on Key will be us	sed when	
*Front Server ID:	FS1			
*Authentication Key:				
Proxy:	None		$\sim$	
		Cancel	ОК	

- Front Server ID keep the default value FS1 as it is.
- **Authentication Key** create an authentication key for the Front Server.

Tip: Keep notes of the Authentication Key because it is required when you <u>register this Front Server</u>.

3. Click **OK**. The Front Server is added to the Front Server list.

+ Add Front Server Controller								G F	Refres
Search	Q	+ Add Front Server							
▲ 🔄 FSC	Connected	ID	Registered	Front Server Hostname	IP Address	Version	Front Server Group	Status	
🔺 📥 Initial Tenant		FS1	No						
📼 FS1									

### 4.6. Registering a Front Server

**Example**: Register a Front Server on Windows Server 2012 R2.

Complete the following steps with administrative privileges.

- 1. On the machine where the Front Server is installed, click the Windows start menu and then click the Server is open the **Apps** pane.
- 2. Under the **NetBrain** category, right-click **Registration** and then select **Run as administrator** from the dropdown list.

3. In the **Registration** dialog, complete the registration form.

-	Registration		-		x	
	Front Server Controller:					
	Format: <address>:<port>. For example, 10.10.10.1:9095. Use the Ctrl+Enter keys to add multiple Front Server Controllers.</port></address>					
	10.10.3.141:9095					
	I I Use SSL				×	
	Conduct Certificate Authority verification					
	Certificate Authority Information:					
	$\ensuremath{\mathrm{C}}$ I have already installed the Certificate Authority on this machine					
	$\ensuremath{}$ I will upload the Certificate Authority from this location					
	signing-ca1.pem		Brows	se	1	
	,				-	
			Te	st		
	Tenant Name: Initial Tenant	_		_		
	Front Server ID: FS1					
	Authentication Key:		Cha	nge		
	Close		Regi	ster		

- 1) Enter the following information about the Front Server Controller.
  - Hostname or IP address with port the IP address of NetBrain Application Server and the port number (defaults to 9095).
- 2) Configure the SSL settings.
  - a) Select the **Use SSL** check box to encrypt the connections to Front Server Controller with SSL. If SSL is disabled on Front Server Controller, leave it unchecked and skip step b) to c).

Note: Select the Use SSL check box only if you enabled SSL on Front Server Controller.

- b) To authenticate the Certificate Authority (CA) of SSL certificates on Front Server Controller, select the **Conduct Certificate Authority verification** check box.
- c) If the CA has not been installed on this machine, click **Browse** to upload the CA file, for example, ca.pem; otherwise, select I have installed the Certificate Authority on this machine.

Note: Only the certificate in Base-64 encoded X.509 PEM format is supported.

- 3) Click **Test** to verify whether this Front Server can establish a connection with Front Server Controller.
- 4) Keep all default values, and then enter the authentication key created when you add this Front Server to a tenant.
- 4. Click **Register**.

**Tip:** After registering the Front Server successfully, you can open the Task Manager and navigate to the **Services** panel to check whether the **NetBrainFrontServer** service is running.

 Click Close after the registration is finished. The Front Server information in the Front Server Controller Manager will be synchronized by clicking **Refresh**.

rch	Q	+ New F	ront Server					
FSC	Connected	ID	Registered	Front Server Hostname	IP Address	Version	Front Server Group	Status
👝 Initial Tenant		FS1	YES	WIN-M2CQ6EJO685	10.10.3.141	8.0		Connected
📼 FS1	Connected		123	This made double of the	10110101111	0.0		connected

### 4.7. Customizing Auto-Update Schedule

Knowledge Cloud (KC) manages both the framework components and the platform resources and allows NetBrain Workstation to automatically upgrade a patch or minor release. Besides replacing the files, the auto-upgrade process may restart services, execute the database upgrading, check the system health and roll back the release if the update fails.

Due to security considerations, there will be no direct connection between KC and NetBrain Workstation. NetBrain System Administrator must download the software update package from NetBrain Customer Portal, manually upload the package into the system and then schedule system updates accordingly.

NetBrain Workstation Auto Upgrade flow consists of the following steps:

**Note:** Only user with System Management permissions can perform the following actions.

- 1. Check the Latest Version
- 2. Download Package from NetBrain Customer Portal
- 3. Upload Package to NetBrain Workstation
- 4. <u>Schedule Update</u>
- 5. <u>View Update Status</u>
- 6. View Update History

### **Check the Latest Version**

Follow the steps below to check the available releases from NetBrain:

**Note:** The following steps only apply to the online auto upgrade procedures.

- 1. In the System Management page, select **Operations > System Update**.
- 2. By default, the **Automatically check the latest version** check box is enabled. You can click **Check Update Now** to see if there is a new version available.

Note: The Web API Server is required to have internet access in order to perform the function of **Check Update Now**.

System Management			Operations	💄 admin	Log Out	0	netBrain (
Home Page X License X Tenants	X User Accounts X Proxy Manager X Front Server Controllers X Email Settings X	Advanced Settings × System	n Update 🛛 🗙				
	Current Version: 10.0.0.0 0					G R	efresh
	☑ Automatically check the latest version Last checked on: 4/21/2021, 1:55:00 AM	Check Update Now					
	Latest Available Version: 10.0.5.0 💿 Release Note	Get Latest Version					
	Uploa	d Latest Version Schedule					
	View Update History						
	To Upgrade the system and resource, do as follows:						
	<ol> <li>Clock the Check Update Now button to see whether there is a new software or resource version available if your this step if your system is offline.</li> </ol>	system is connected to the Internet. Ign	ore				
	<ol> <li>Click the <b>Extest Version</b> button to log in <b>NetBrain Portal</b> and download the software package. The package used by other systems.</li> </ol>	is created just for this system and cann	ot be				
	<ol> <li>Click the Upload Latest Version button and upload the file downloaded at step 2.</li> <li>Click the Schedule button to schedule the system update.</li> </ol>						

- 3. When this check is enabled, NetBrain Workstation will check whether a minor release, a patch, a customized built-in, a customized resource or common platform resource updates have been published since the last time check (either auto or manual check). The latest available version will be displayed with the release note.
- 4. If the respective release or patch is available, after reviewing the Release Note, click **Get Latest Version** to Download Package from NetBrain Customer Portal.

### Download Package from NetBrain Customer Portal

Follow the steps below to download the system upgrade package from NetBrain Customer Portal:

1. Log into the NetBrain Customer Portal with your username and password.

**Note:** After clicking **Get Latest Version** in NetBrain Workstation, you will be redirected to the NetBrain Customer Portal. The portal account credentials are required by the web browser to grant access to the NetBrain Customer Portal.

2. Confirm the required info and click **Generate Package**.

**Tip:** Required info includes the License ID, Framework Version, Common Repo Version, Customized Built-in Resource Repo, Customized Resource Repo.

License Id	Framework Version
12345678	10.0.0.0
Common Repo	
37dcc3b5-0083-3089-8b50-	920b7a6f1872 v0.0.2
Customized Built-in Resource R	еро
Customized Resource Repo	
N/A	

- 3. Click **Resource Package Link** to download the package to your local drive.
- 4. Keep note of the password for next step- <u>Upload Package to NetBrain Workstation</u>.

License Id		Framework Version
12345678		10.0.0.0
Common Repo		
37dcc3b5-0083-3089-8b50	0-920b7a61	f1872 v0.0.2
Customized Built-in Resource	Repo	
N/A		
Customized Resource Repo		
Include All Platform Resou	rces	
		Generate Packag
Resource Package	e Link Pas	ssword: MySjGfmFxrhj6wz4gTEL

## Upload Package to NetBrain Workstation

Follow the steps below to upload the system upgrade package to NetBrain Workstation:

- 1. In the System Management page, select **Operations > System Update**.
- 2. Click Upload Latest Version.
- 3. Click **Browse** and select the system upgrade package (.zip file).
- 4. Enter the password and click **Upload**.

🗹 Automatically	check the latest version Last checked on: 4/21/2021, 1	:55:00 AM	Check Update Now
Lat Upload Late	st Version	×	Get Latest Version
File Name:	cc36bcb7-4443-40f1-978c-b422f82d38c1.zip	Browse	
Password:		Upload	d Latest Version Schedule
/iew	Cancel	Upload	
o Upgrade the syst	em and resource, do as follows: <b>pdate Now</b> button to see whether there is a new softwa	ra or racource version available if your	surtem is connected to the laternat la
Challen Charles II		re or resource version available if your	system is connected to the internet. Ig

## Schedule Update

Follow the steps below to schedule the system update:

- 1. In the System Management page, select **Operations > System Update**.
- 2. Click Schedule.

#### 3. Review and update Test Plan

Review Test Plan Schedule Update	
After the system is upgraded, the system will execute the following test plan to ensure that the system works as expe	cted:
1. Basic system status check such as the server connectivity, service status and key process.	
If any serious error is found, the system will rollback the update	
2. Domain health and data accuracy test	
a. The system will perform Domain Health test for the following domain.	
Tenant: Initial Tenant Select Domain: Domain1	
b. The system will perform Data Accuracy test for the following devices and applications.	
Device: Auto Test Group	
Application: Auto Test Application Folder	

Cancel	Submit
Carree	Subinic

#### 1) Click **Select** and specify the desired Tenant/Domain to perform Domain Health Check.

**Note**: If there are more than one tenant or domain, step 1) must be completed before proceeding to step 2).

**Note**: If there is only one tenant and domain, the Initial Tenant will be automatically selected and you can directly proceed to step 2).

Schedule Update	Device Group - Auto Test	Group		×	×
Review Test P				🔓 Refresh	
Review Test P	Hostname	Vendor	Model	Management IP	
After the sy	11	HP(3Com)	hh3c-s5100-16P-PW	172.24.101.31	s expected:
	BJ-Arista-2	Arista	DCS7050Q16	172.24.101.68	, expected.
1. Basic syst If any seri	BI-Avava-1	Avaya	ERS 5520	172.24.101.65	
2. Domain h		Cisco	Catalyst wsc5000	172.24.101.52	
a. The sys	EX2200-2	Juniper	EX2200-48t	172.24.101.33	
Tree	🙉 GW2Lab	Cisco	3945SPE250	10.10.7.253	
Tena			To modify Auto Test Group, pleas	e modify from end user page.	
b. The sys				ОК	
Devic	ce: Auto Test Gro	an			
Appli	ication: Auto Test App				
				Cancel	Submit

### 2) Click **Auto Test Group** to specify the devices for Data Accuracy Test.

**Tip**: The devices in the Auto Test Group are automatically selected according to the device type discovered by the system. You can also manually edit or delete any devices to suit your specific needs.

3) Click **Auto Test Application Folder** to specify the application for Data Accuracy Test.

fter the system is upgraded		Application - Auto		at the system work	s as avnastad	
If any serious error is found						🔓 Refre
Domain health and data acc		Path	Source	Destination	Group	Protocol
a. The system will perform l	Domain Health test for the	U test1	10.10.4.41	172.21.3.5		IPv4
Tenant: Initial Ter	nant Select	U test3	172.26.3.10	172.26.4.10		IPv4
Domain: Domain1		<b>U</b> 35	10.10.7.253	172.24.101.35		IPv4
b. The system will perform l	Data Accuracy test for the	U test2	10.10.4.41	10.10.34.62		IPv4
Device: Auto	Test Group	U test4	172.24.30.5	172.24.100.1		IPv4
	Test Application			To modify Auto Test A	pplication, pleas	e modify from end user p

**Note**: The last used Application Paths (up to 5 paths) will be automatically copied to the Auto Test Application Folder. You can also manually change the auto selected path in <u>Application Manager</u>.

#### 5. Set up the schedule to start the system update.

Sc	hedule Update - Version	n 10.0.4.13	×
	Review Test Plan	Schedule Update	
	Update Start Time:	2021-03-23	
	Time Zone:	(UTC-05:00) Eastern Time (US & Canada) V	
		Cancel Submit	t

Tip: You can edit or remove the system update time once it is scheduled.

6. Click **Submit** to apply the above settings.

**Note**: A confirmation message will prompt if the selected tenant/domain does not have application path, you can click Yes to dismiss the message and continue with the update process.

### **View Update Status**

There are three possible outputs of auto update:

- The system is successfully updated to the new version.
- The update fails, and the system is rolled back to the old version.
- The update fails, and the system rollback fails.

Current Version:	10.0.4.17 📵
------------------	-------------

Successfully installed version 10.0.4.17.				
4/7/2021, 10:15:13 PM Executor: nguo	View Test Results	View Installation I	og	Rollback
Automatically check the latest version Last checked on: 4/7/2021, 11	:16:36 PM		Chec	k Update Now
Latest Available Version: N/A (1)				Latest Version
		Upload Latest Versio	n	Schedule

View Update History

### **View Update History**

Follow the steps below to view the update history:

1. In the System Management page, select **Operations > System Update**.

#### 2. Click View Update History.

The update history only records the releases the system is scheduled to update with. The update history table provides the following information:

- **Version:** the release number to which the system is updated.
- **Update time:** when the system finished the update.
- **Executor:** the person to schedule the update
- **Status:** one of three status in <u>View Update Status</u>.
- Installation log: the link of the installation log.
- **Test report:** the link of the test results.

pgrade mont	Upgrade To	Updated Time	Executor	Action	Status	Release Note	Installation Log	Test Report
0.0.2.59 🕦	10.0.2.102 (	Mar 3, 2021, 03:41:06 PM	admin	Upgrade	Executing	Release Note	Installation Log	Test Results

### 4.8. Monitoring Server and Service Metrics

NetBrain Service Monitor provides a portal for administrators to observe the health of deployed Windows and Linux servers, with operations management of related services. It collects various types of metrics data from these deployed servers and visualizes them in tables or line charts.

**Note:** The Service Monitor Agent must be installed on the servers that you want to monitor.

**Note:** System upgrade feature heavily relies on all the NetBrain servers and service metrics, therefore it is required to ensure all the NetBrain servers and component metrics can be viewed in the Service Monitor page.

To monitor server and service metrics:

- 1. In the System Management page, click **Operations > Service Monitor** from the quick access toolbar.
- 2. In the Service Monitor home Page, you can monitor key server metrics, server connectivity, resource utilization, service status and so on.
- 3. Customize the conditions for when to send out alert emails and take more actions for low disk space on MongoDB by clicking **Alert Rules**. See <u>Managing Alert Rules</u> for more details.

# 5. Appendix: Editing a File with VI Editor

The following steps illustrate how to edit a configuration file with the vi editor, which is the default text file editing tool of a Linux operating system.

- 1. Create a terminal and run the cd command at the command line to navigate to the directory where the configuration file is located.
- 2. Run the vi <configuration file name> command under the directory to show the configuration file.
- 3. Press the Insert or I key on your keyboard, and then move the cursor to the location where you want to edit.
- 4. Modify the file based on your needs, and then press the **Esc** key to exit the input mode.
- 5. Enter the :wq! command and press the **Enter** key to save the changes and exit the vi editor.

# 6. Appendix: Third-Party User Authentication

In addition to <u>creating user accounts manually</u>, the system supports integrating with the following third-party user management systems for authentication.

- LDAP Authentication
- <u>AD Authentication</u>
- <u>TACACS+ Authentication</u>
- SSO Authentication