NICE Desktop Cloud Visualization
Administrator Guide
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What Is NICE Desktop Cloud Visualization?

NICE Desktop Cloud Visualization is a remote visualization technology that enables you to securely connect to graphic-intensive 3D applications hosted on a remote high-performance server. With NICE DCV, you are able to leverage the server’s processor, GPU, I/O capabilities, and memory.

Topics
- How NICE DCV Works (p. 1)
- Features of NICE DCV (p. 1)
- NICE DCV Requirements (p. 2)
- NICE DCV Pricing (p. 3)

How NICE DCV Works

In a typical NICE DCV scenario, a graphic-intensive application, such as a 3D modeling or computer-aided design application, is hosted on a high-performance server that provides a high-end GPU, fast I/O capabilities, and large amounts of memory. The NICE DCV server software is installed and configured on the server and it is used to create a secure session. You use a NICE DCV client to remotely connect to the session and use the application hosted on the server. The server uses its hardware to perform the high-performance processing required by the hosted application. The NICE DCV server software compresses the visual output of the hosted application and streams it back to you as an encrypted pixel stream. Your NICE DCV client receives the compressed pixel stream, decrypts it, and then outputs it to your local display.

Features of NICE DCV

NICE DCV offers the following features:

- **Enables collaboration** — It provides sessions that support multiple collaborative clients. Sessions are dynamic and clients can connect and disconnect at any time during the session.
- **Supports H.264-based encoding** — It uses H.264-based video compression and encoding to reduce bandwidth consumption.
- **Supports NVIDIA GRID** — It uses the latest NVIDIA Grid SDK technologies, such as NVIDIA H.264 hardware encoding, to improve performance and reduce system load. Requires an NVIDIA GRID compatible GPU.
- **Shares the entire desktop** — It uses the high-performance NICE DCV protocol to share full control of the entire desktop.
- **Supports NVIDIA vGPU technology** — It uses the NVIDIA virtual GPU (vGPU) technology to simplify the deployment of Windows virtual machines and to support GPU sharing. Requires an NVIDIA GRID compatible GPU.
- **Supports lossless quality video compression** - It supports lossless quality video compression when the network and processor conditions allow.
- **Transport images only** — It transports rendered images as pixels instead of geometry and scene information. This provides an additional layer of security as no proprietary customer information is sent over the network.
• **Adapts compression levels** — It automatically adapts the video compression levels based on the network’s available bandwidth and latency.

• **Supports smart card remotization** — It provides seamless access to local smart cards using the Personal Computer/Smart Card (PC/SC) interface. Smart cards can be used for encrypting emails, signing documents, and authenticating against remote systems. Requires the native Windows NICE DCV client and a Linux NICE DCV server.

• **Matches display layouts** — It automatically adapts the server’s screen resolution and display layout to match the size of the client window.

• **Provides an HTML5 client** - It offers an HTML5 client that can be used with any modern web browser on Windows and Linux.

• **Supports modern Linux desktop environments** — It supports modern Linux desktops, such as Gnome 3 on RHEL 7.

## NICE DCV Requirements

For a good user experience with NICE DCV, ensure that the server and client computers meet the following minimum requirements. Keep in mind that your users' experience is largely dependent on the number of pixels streamed from the NICE DCV server to the NICE DCV client.

### Contents

- NICE DCV Server Requirements (p. 2)
- NICE DCV Client Requirements (p. 3)

## NICE DCV Server Requirements

If you are installing the NICE DCV server on an Amazon EC2 instance, we recommend that you use an Amazon EC2 G3 instance type. These instance types offer NVIDIA GPUs that support hardware-based OpenGL and GPU sharing. For more information, see Amazon EC2 G3 Instances. You can install the NICE DCV server on any other instance type, but there might be screen resolution limitations. A third-party driver can be used to bypass this limitation. If you need the third-party driver, request it from NICE Support.

NICE DCV servers must meet the minimum requirements listed in the following table.

<table>
<thead>
<tr>
<th>Operating system</th>
<th>Windows server</th>
<th>Linux server</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows 7</td>
<td>Requires NvFBC compatible NVIDIA GPU</td>
<td>CentOS 6.7 or later</td>
</tr>
<tr>
<td>Windows Server 2008 R2</td>
<td>Requires NvFBC compatible NVIDIA GPU</td>
<td>CentOS 7.3 or later</td>
</tr>
<tr>
<td>Windows 8.1</td>
<td></td>
<td>RHEL 6.7 or later</td>
</tr>
<tr>
<td>Windows Server 2012 R2</td>
<td></td>
<td>RHEL 7.3 or later</td>
</tr>
<tr>
<td>Windows 10</td>
<td></td>
<td>SUSE Linux Enterprise 12 with SP2 or later</td>
</tr>
<tr>
<td>Windows Server 2016</td>
<td></td>
<td>Note</td>
</tr>
</tbody>
</table>

**Note**

All supported Windows operating systems require .NET Framework 4.5 and must support the x86-64 architecture.
## Client Requirements

<table>
<thead>
<tr>
<th>Windows server</th>
<th>Linux server</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>64-bit processors only</td>
</tr>
<tr>
<td>GPU</td>
<td>(Optional) An NVIDIA GPU that supports NVIFR or NVENC is required for hardware-based OpenGL. Software-based OpenGL is used if the server does not have an NVIDIA GPU.</td>
</tr>
</tbody>
</table>

An NVIDIA GPU is required for GPU sharing across virtual sessions.

| Network | By default, the NICE DCV server communicates over port 8443. The port is configurable but must be greater than 1024. Ensure that the server allows communication over the required port. |

## NICE DCV Client Requirements

The following table lists the minimum system requirements for the NICE DCV clients.

<table>
<thead>
<tr>
<th></th>
<th>Native Windows client</th>
<th>Web browser client</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Software</strong></td>
<td>The Native Windows client is supported on 32-bit and 64-bit versions of the following operating systems:</td>
<td>The web browser client is supported on the following browsers across all desktop operating systems:</td>
</tr>
<tr>
<td></td>
<td>• Windows 7</td>
<td>• Firefox</td>
</tr>
<tr>
<td></td>
<td>• Windows 8.1</td>
<td>• Chrome</td>
</tr>
<tr>
<td></td>
<td>• Windows 10</td>
<td>• Edge</td>
</tr>
<tr>
<td></td>
<td><strong>Note</strong></td>
<td>• Internet Explorer 11</td>
</tr>
<tr>
<td></td>
<td>Clients require .NET Framework 4.5.</td>
<td>• Safari 11</td>
</tr>
</tbody>
</table>

**Note**

The web browser client requires WebGL and asm.js.

**Note**

The web browser client is not supported on mobile operating systems, such as Android and iOS.

| Network | The client must be able to connect to the NICE DCV server, and it must be able to communicate over the required port (8443 by default). |

## NICE DCV Pricing

There is no additional charge for using the NICE DCV server on an Amazon EC2 instance. You pay the standard rates for the instance and other Amazon EC2 features that you use.

A license is required to install the NICE DCV server on an on-premises or alternative cloud-based server. For more information, see Licensing NICE DCV (p. 8).
Setting Up NICE DCV

To use NICE DCV, install the NICE DCV server software on the server where you intend to host NICE DCV sessions. Ensure that it is properly licensed.

The following topics explain how to install and license the NICE DCV server. The Licensing (p. 8) topic applies to installations on on-premises and alternative cloud-based servers only, as a license is not required to use the NICE DCV server on an Amazon EC2 instance.

Topics
• Installing the NICE DCV Server (p. 4)
• Licensing NICE DCV (p. 8)

Installing the NICE DCV Server

The following topics explain how to install the NICE DCV server on a Windows and Linux server. You need to follow these steps if you are installing NICE DCV on an Amazon EC2 instance, or on an on-premises or alternative cloud-based server.

Topics
• Installing the NICE DCV Server on Windows (p. 4)
• Installing the NICE DCV Server on Linux (p. 6)

Installing the NICE DCV Server on Windows

The NICE DCV server can be installed on a Windows host server using an installation wizard. The wizard walks you through a series of steps that let you customize your NICE DCV server installation. Alternatively, you can use the command line to perform an unattended installation, which uses default settings to automate the installation procedure.

Note
The NICE DCV server installer is signed by an SHA-256 certificate. If you are using a Windows 7 or Windows Server 2008 R2 server, you must install a Microsoft security update to support this certificate type. For more information, see Microsoft Security Advisory 3033929 and Microsoft Windows Support.

Contents
• Using the Wizard (p. 4)
• Unattended Installation (p. 5)

Using the Wizard

Use the NICE DCV server installation wizard for a guided installation.

To install the NICE DCV server on Windows using the wizard
1. Launch and connect to the server on which to install the NICE DCV server.
2. Download the NICE DCV server installer from the NICE website.
   
   **Note**
   The NICE DCV server is only available in a 64-bit version and supported on 64-bit Windows operating systems.


4. On the Welcome screen, choose Next.

5. On the End-User License Agreement screen, read the license agreement. If you accept the terms, select the **I accept the terms in the License Agreement** check box and choose Next.

6. On the DCV Service Configuration screen:
   
   a. (Optional) To manually configure your server's firewall to allow communication over the required port, select **No, I will manually configure my firewall later**.
   
   b. (Optional) To manually start the NICE DCV server after the installation, select **No, I want to start a DCV Service manually**. If you select this option, you can't start a console session automatically after the installation has completed. The next step is skipped.

7. Choose Next.

8. On the DCV Session Management Configuration screen, specify the owner for the automatic console session. Alternatively, to prevent the automatic console session from starting after the installation has completed, select **No, I will create the session manually**.
   
   **Note**
   Complete this step only if you previously chose to allow the server to start automatically.

9. Choose Install.

### Unattended Installation

The unattended installation does the following by default:

- Adds a firewall rule to allow communication over port 8443.
- Enables NICE DCV server auto-start.
- Creates an automatic console session.
- Sets the console session owner to the user who performs the installation.

You can override the default actions by appending the following options to the installation command:

- `DISABLE_FIREWALL=1` — Prevents the installer from adding the firewall rule.
- `DISABLE_SERVER_AUTOSTART=1` — Prevents the NICE DCV server from starting automatically after the installation.
- `DISABLE_SERVER_AUTOMATIC_SESSION_CREATION=1` — Prevents the installer from starting the automatic console session.
- `AUTOMATIC_SESSION_OWNER=owner_name` — Specifies a different owner for the automatic console session.

### To install the NICE DCV server on Windows using an unattended installation

1. Launch and connect to the server on which to install the NICE DCV server.

2. Download the NICE DCV server installer from the NICE website.
   
   **Note**
   The NICE DCV server is only available in a 64-bit version and supported on 64-bit Windows operating systems.

3. Open a command prompt window and navigate to the folder where you downloaded the installer.
4. Execute the unattended installer:

```
C:\> msiexec.exe /i nice-dcv-server-x64-Release-2017.version_number.msi /quiet /norestart /l*v dcv_install_msi.log
```

## Installing the NICE DCV Server on Linux

The NICE DCV server is installed on a Linux host server using a series of RPM packages. The RPM packages install all required packages and their dependencies, and perform the necessary server configuration.

**Note**
You must be logged in as the root user to install the NICE DCV server.

### To install the NICE DCV server on a Linux server

1. Launch and connect to the server on which to install the NICE DCV server.
2. The NICE DCV server RPM packages are digitally signed with a secure GPG signature. To allow the package manager to verify the package signature, you must import the NICE GPG key. Open a terminal window and import the NICE GPG key.

   ```
   $ sudo rpm --import https://s3-eu-west-1.amazonaws.com/nice-dcv-publish/NICE-GPG-KEY
   ```

3. Download the RPM packages from the NICE website. The RPM packages are packaged into a .tgz archive. Ensure that you download the correct archive for your operating system.
4. Extract the contents of the .tgz archive.

   - **RHEL 6.x and CentOS 6.x**
     ```
     $ tar -xvzf nice-dcv-2017.0-version-el6.tgz
     ```

   - **RHEL 7.x and CentOS 7.x**
     ```
     $ tar -xvzf nice-dcv-2017.0-version-el7.tgz
     ```

   - **SUSE Linux Enterprise 12.x**
     ```
     $ tar -xvzf nice-dcv-2017.0-version-sles12.tgz
     ```

5. Navigate into the extracted folder.

   - **RHEL 6.x and CentOS 6.x**
     ```
     $ cd nice-dcv-2017.0-version-el6
     ```

   - **RHEL 7.x and CentOS 7.x**
     ```
     $ cd nice-dcv-2017.0-version-el7
     ```

   - **SUSE Linux Enterprise 12.x**
     ```
     $ cd nice-dcv-2017.0-version-sles12
     ```

6. Install the NICE DCV server.

   - **RHEL 6.x and CentOS 6.x**
7. (Optional) If you plan to use virtual sessions, install the nice-xdcv package.
   • RHEL 6.x and CentOS 6.x
   ```
   $ sudo yum install nice-xdcv-2017.0.version.el6.x86_64.rpm
   ```
   • RHEL 7.x and CentOS 7.x
   ```
   $ sudo yum install nice-xdcv-2017.0.version.el7.x86_64.rpm
   ```
   • SUSE Linux Enterprise 12.x
   ```
   $ sudo zypper install nice-xdcv-2017.0.version.sles12.x86_64.rpm
   ```

8. (Optional) If you plan to use GPU sharing, install the nice-dcv-gl package.
   • RHEL 6.x and CentOS 6.x
   ```
   $ sudo yum install nice-dcv-gl-2017.0.version.el6.x86_64.rpm
   ```
   • RHEL 7.x and CentOS 7.x
   ```
   $ sudo yum install nice-dcv-gl-2017.0.version.el7.x86_64.rpm
   ```
   • SUSE Linux Enterprise 12.x
   ```
   $ sudo zypper install nice-dcv-gl-2017.0.version.sles12.x86_64.rpm
   ```

   **Note**
   You can optionally install the nice-dcv-gltest package. This package includes a simple OpenGL application that can be used to determine whether your virtual sessions are properly configured to use hardware-based OpenGL.

9. (Optional) If you plan to use NICE DCV with NICE EnginFrame, install the nice-dcv-simple-external-authenticator package.
   • RHEL 6.x and CentOS 6.x
   ```
   $ sudo yum install nice-dcv-simple-external-authenticator-2017.0.version.el6.x86_64.rpm
   ```
   • RHEL 7.x and CentOS 7.x
   ```
   $ sudo yum install nice-dcv-simple-external-authenticator-2017.0.version.el7.x86_64.rpm
   ```
SUSE Linux Enterprise 12.x

$ sudo zypper install nice-dcv-simple-external-authenticator-2017.0.version.sles12.x86_64.rpm

**Licensing NICE DCV**

The NICE DCV licensing requirements differ depending on where you are installing and using the NICE DCV server.

**NICE DCV on Amazon EC2**

You do not need a license server to install and use the NICE DCV server on an EC2 instance. The NICE DCV server automatically detects that it is running on an Amazon EC2 instance and periodically connects to an Amazon S3 bucket to determine whether a valid license is available.

Make sure that your instance:

- Can reach the Amazon S3 endpoint. If it has access to the internet, it connects using the Amazon S3 public endpoint. If your instance does not have access to the internet, configure an endpoint to the Amazon S3 service for your VPC. For more information, see [New – VPC Endpoint for Amazon S3](#).
- Has permission to access the required Amazon S3 object. Add the following Amazon S3 access policy to the instance's IAM role and replace the `region` placeholder with your region. For more information, see [Create IAM Role](#).

```json
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Effect": "Allow",
            "Action": "s3:GetObject",
            "Resource": "arn:aws:s3:::dcv-license.region/*"
        }
    ]
}
```

If you are installing and using the NICE DCV server on an Amazon EC2 instance, you can skip the rest of this chapter. The rest of this chapter only applies to using the NICE DCV server on an on-premises or alternative cloud-based server.

**NICE DCV on On-premises and Other Cloud-based Servers**

A license is required to install and use the NICE DCV server on an on-premises or alternative cloud-based server. The following licensing options are available:

- **Automatic demo license**— Automatically installed when you install the NICE DCV server. These licenses are valid for a period of 15 days from the date of installation. After the license expires, you are no longer able to create and host NICE DCV sessions on the server. These licenses are ideal for short-term testing. To test for a longer period, request an extended demo license.

  **Note**
  The NICE DCV server defaults to the automatic demo license if no other license has been configured.
• **Extended demo license**—An extended demo license is a demo license that is valid for a period longer than 15 days. The period is determined by NICE on a case-by-case basis. Extended demo licenses become invalid when they reach their expiration date, and you are no longer able to create and host NICE DCV sessions on the server. Extended demo licenses must be requested from NICE. They come as a license file that must be installed on the NICE DCV server.

• **Floating license**—A floating license is a full license that you purchase from NICE. Floating licenses do not have an expiration date and can be used for an indefinite period. However, they do limit the number of sessions that you can host on the NICE DCV server concurrently. These licenses come as a license file to be installed on a Reprise License Manager (RLM) server.

For more information about licenses, see the NICE website.

**Note**
NICE DCV clients do not require a license.

**Topics**
- Installing an Extended Demo License (p. 9)
- Installing a Floating License (p. 10)

### Installing an Extended Demo License

When you request an extended demo license from NICE, you receive a `license.lic` file that defines the license.

**To install the extended demo license**

Place the `license.lic` file in the following folder on your server:

- **Windows server**
  
  ```
  C:\Program Files\NICE\DCV\Server\license\license.lic
  ```

- **Linux server**
  
  ```
  /usr/share/dcv/license/license.lic
  ```

Alternatively, to place the `license.lic` in a different folder on the server, you must update the `license-file` configuration parameter so that it specifies the license file's full path.

**To update the `license-file` configuration parameter on a Windows server**

1. Open the Windows Registry Editor.
2. Navigate to the `HKEY_USERS/S-1-5-18/Software/GSettings/com/nicesoftware/dcv/license/` key and select the `license-file` parameter.
   
   If there is no `license-file` parameter in the registry key, create one:
   
   a. Open the context (right-click) menu for the `license` key in the left-hand panel and choose **New, String Value**.
   
      b. **For Name**, type `license-file` and press **Enter**.
   
   3. Open the `license-file` parameter. **For Value data**, type the full path to the `license.lic` file.
   
   4. Choose **OK** and close the Windows Registry Editor.
To update the license-file configuration parameter on a Linux server

1. Navigate to `/etc/dcv/` and open the `dcv.conf` with your preferred text editor.
2. Locate the `license-file` parameter in the `[license]` section, and replace the existing path with the new full path to the `license.lic` file.

   If there is no `license-file` parameter in the `[license]` section, add it manually using the following format:

   ```ini
   license-file = "'/custom-path/license.lic"
   ```

3. Save and close the file.

Installing a Floating License

When you purchase a floating license from NICE, you receive a `license.lic` file that defines the license. To install the license, you must:

1. Modify the license file.
2. Prepare the Reprise License Manager (RLM) server.
3. Configure the NICE DCV server.

Contents

- Step 1: Modify the License File (p. 10)
- Step 2: Prepare the RLM Server (p. 11)
- Step 3: Configure the NICE DCV Server (p. 15)

Step 1: Modify the License File

The `license.lic` file that you receive from NICE specifies the following information:

- The RLM server's hostname, `rlmhostid` identifier, and TCP port number
- The NICE DCV products covered by the license, along with the following details for each product:
  - The major version covered by the license. For example, `2017` for the 2017 NICE DCV products.
  - The expiration date. `Permanent` indicates that the license does not expire.
  - The maximum number of concurrent sessions. For example, `10` for 10 concurrent sessions on the server.
  - The license checksum.
  - The license signature.

The following code block shows the format of the `license.lic` file:

```ini
[RLM]
RLM_server_hostname
RLM_server_identifier
RLM_server_port

[ISV]
nice

[LICENSE]
product_1 major_version expiration_date concurrent_sessions share=hi _ck=checksum sig="signature"
product_2 major_version expiration_date concurrent_sessions share=hi _ck=checksum sig="signature"
```

The following code block shows an example of a `license.lic` file:
To modify the license.lic file received from NICE

Open the file with your preferred text editor and add your RLM server's hostname, rlmhostid identifier, and TCP port number to the first line in the file, which starts with HOST.

**Note**
Modifying any other part of the license corrupts the file's signature.

Step 2: Prepare the RLM Server

The license file must be installed on an RLM server. Any NICE DCV server that can access the RLM server can use the license.

For more information about RLM, see the Reprise Software website.

To prepare the RLM server on Windows

1. On your RLM server, download the RLM License Administration Bundle from the Reprise Software website.
2. Extract the contents of the RLM License Administration Bundle to C:\RLM.
3. Copy the license.lic file that you received from NICE to C:\RLM\license\.
4. Copy the nice.set file from your NICE DCV server and place it in the C:\RLM\ folder on your RLM server.
   
   The nice.set file can be found in the following location on your NICE DCV server:
   
   • Windows NICE DCV server:
     
     C:\Program Files\NICE\DCV\Server\license\
   
   • Linux NICE DCV server:
     
     /usr/share/dcv/license/
   
5. On your RLM server, open a command prompt window and do the following:
   
   a. Create an RLM root folder:
      
      C:\> cd C:\RLM
   
   b. Install the RLM server as a Windows service. For more information about the RLM startup options, see the RLM License Administration Manual.
      
      C:\> rlm.exe -nows -dlog C:\RLM\rlm.log -c C:\RLM\license -install_service -service_name dcv-rlm
   
6. Start the RLM server:
     
     C:\> net start dcv-rlm
7. Confirm that the RLM server is running and functioning as expected.
   a. Open the `rlm.log` file located in `C:\RLM\` with your preferred text editor and confirm that the following line appears:

   **Note**
   The contents of the `rlm.log` file might vary slightly depending on the RLM server version.

   ```
   date_time (nice) Server started on license1 (hostid: host_id) for: dcv dcv-gl
   ```

   b. Run the following command:

   ```
   C:\RLM\rlmstat -a -c rlm_server_hostname@5053
   ```

**To prepare the RLM server on Linux**

1. Log into your RLM server as `root` and download the RLM License Administration Bundle from the Reprise Software website.
2. Create a user group and a new `rlm` user.
   **Note**
   This can be any valid user or service account. We strongly recommend that this value not be the root account.

   ```
   # groupadd -r rlm
   
   # useradd -r -g rlm -d "/opt/nice/rlm" -s /sbin/nologin -c "RLM License Server" rlm
   ```

3. Create the `/opt/nice/rlm` and `/opt/nice/rlm/license` folders needed for the RLM server:

   ```
   # mkdir -p /opt/nice/rlm/license
   ```

4. Extract the contents of the RLM License Administration Bundle to `/opt/nice/rlm/`, and ensure that the files are owned by the `rlm` user:

   ```
   # tar xvf x64_l1.admin.tar.gz -C /opt/nice/rlm/ -stripcomponents 1
   # chown -R rlm:rlm /opt/nice/rlm
   ```

5. Copy the `license.lic` file that you received from NICE to `/opt/nice/rlm/license/`.
6. Copy the `nice.set` file from your NICE DCV server and place it in `/opt/nice/rlm` on your RLM server.
   The `nice.set` file can be found in the following location on your NICE DCV server:
   - Windows NICE DCV server:
     ```
     C:\Program Files\NICE\DCV\Server\license\n     ```
   - Linux NICE DCV server:
     ```
     /usr/share/dcv/license/
     ```

7. Start the RLM server:
8. Verify that the RLM server is running and functioning as expected. Open `var/log/rlm.log` with your preferred text editor and confirm that the following line appears:

   **Note**
   The contents of the `rlm.log` might vary slightly depending on the RLM server version.

   ```
   date_time (nice) Server started on license1 (hostid: host_id) for: dcv dcv-gl
   ```

9. Ensure that the RLM server starts automatically.
   a. Create a file named `dcv-rlm` in the `/opt/nice/rlm/` folder:

      ```
      # touch /opt/nice/rlm/dcv-rlm
      ```

   b. Open the file using your preferred text editor and add the following script. Save and close the file.

   ```bash
   #!/bin/sh
   # chkconfig: 35 99 01
   # description: The Reprise License Manager daemon.
   # processname: dcv-rlm

   ### BEGIN INIT INFO
   # Provides: dcv-rlm
   # Required-Start: $local_fs $remote_fs $syslog
   # Required-Stop: $local_fs $remote_fs $syslog
   # Default-Start: 3 4 5
   # Default-Stop: 0 1 2 6
   # Short-Description: The Reprise License Manager daemon.
   # Description: A service that runs the Reprise License Manager daemon.
   ### END INIT INFO

   # user used to run the daemon
   RLM_USER="rlm"

   # root of rlm installation
   RLM_ROOT="/opt/nice/rlm"

   # license directory (license files should have .lic extension)
   RLM_LICENSE_DIR="/opt/nice/rlm/license"

   # log file
   RLM_LOG_FILE="/var/log/rlm.log"

   _getpid() {
     pidof -o $$ -o $PPID -o %PPID -x "$1"
   }

   start() {
     echo -n "Starting rlm: "
     touch "$(RLM_LOG_FILE)"
     chown "$RLM_USER" "$RLM_LOG_FILE"
     su -p -s /bin/sh "$RLM_USER" -c "$(RLM_ROOT)/rlm -c "$RLM_LICENSE_DIR" -nows -dlog +$(RLM_LOG_FILE) &"
     if [ $# -ne 0 ]; then
       echo "FAILED"
       return 1
     fi
     echo "OK"
   }
   ```
stop() {
  echo -n "Stopping rlm: 
  pid= _getpid ${RLM_ROOT}/rlm
  if [ -n "$pid" ]; then
    kill $pid >/dev/null 2>&1
    sleep 3
    if [ -d "/proc/$pid" ]; then
      echo "FAILED"
      return 1
    fi
  fi
  echo "OK"
}

status() {
  pid = _getpid ${RLM_ROOT}/rlm
  if [ -z "$pid" ]; then
    echo "rlm is stopped"
    return 3
  fi
  echo "rlm (pid $pid) is running..."
  return 0
}

restart() {
  stop
  start
}

case "$1" in
  start)
    start
    ;;
  stop)
    stop
    ;;
  status)
    status
    ;;
  restart)
    restart
    ;;
  *)
    echo "$Usage: #0 {start|stop|status|restart}"
    exit 1
esac

exit $?

# ex:ts=4:et:

c. Make the script executable, copy it to /etc/init.d/, and then add it to the chkconfig utility:

  chmod +x /opt/nice/rlm/dcv-rlm

  cp -a /opt/nice/rlm/dcv-rlm /etc/init.d/

  chkconfig --add dcv-rlm
Step 3: Configure the NICE DCV Server

Configure your NICE DCV server to use your RLM server. To do this, you must configure the license-file configuration parameter on your NICE DCV server.

**To configure the license-file configuration parameter on a Windows server**

1. Open the Windows Registry Editor.
2. Navigate to the `HKEY_USERS/S-1-5-18/Software/GSettings/com/nicesoftware/dcv/license/` key and select the `license-file` parameter.
   
   If there is no `license-file` parameter in the registry key, you must create one:
   
   a. Open the context (right-click) menu for the `license` key in the left-hand panel and choose **New, String Value**.
   b. For **Name**, type `license-file` and press **Enter**.
3. Open the `license-file` parameter. For **Value data**, type RLM server port and hostname in the `5053@RLM_server_hostname` format.
   
   **Note**
   
   You can use the RLM server IP address instead of its hostname.
4. Choose **OK** and close the Windows Registry Editor.

**To configure the license-file configuration parameter on a Linux server**

1. Navigate to `/etc/dcv/` and open the `dcv.conf` with your preferred text editor.
2. Locate the `license-file` parameter in the `[license]` section, and replace the existing path with the RLM server's port and hostname in the `5053@RLM_server_hostname` format.
   
   If there is no `license-file` parameter in the `[license]` section, add it manually using the following format:

   ```
   license-file = "5053@RLM_server_hostname"
   ```
   
   **Note**
   
   You can use the RLM server IP address instead of its hostname.
3. Save and close the file.
Managing the NICE DCV Server

The NICE DCV server runs as an operating system service. You must be logged in as the administrator (Windows) or root (Linux) to start, stop, or configure the NICE DCV server.

Topics
- Starting the NICE DCV Server (p. 16)
- Stopping the NICE DCV Server (p. 17)
- Changing the NICE DCV Server TCP Port (p. 18)
- Disconnecting Idle Clients (p. 19)
- Enabling GPU Sharing on a Linux NICE DCV Server (p. 20)
- Changing the TLS Certificate (p. 21)
- Enabling Session Storage (p. 22)
- Configuring NICE DCV Authentication (p. 23)
- Configuring NICE DCV Authorization (p. 24)

Starting the NICE DCV Server

The NICE DCV server must be running in order to host sessions.

By default, the NICE DCV server is configured to start automatically when the server it is hosted on starts up. However, if you chose to disable automatic startup when you installed the NICE DCV server, you must start the server manually using the following procedures.

Contents
- Starting the NICE DCV Server on Windows (p. 16)
- Starting the NICE DCV Server on Linux (p. 17)

Starting the NICE DCV Server on Windows

Use the following procedure to manually start the NICE DCV server using the Windows Service snap-in.

To start the NICE DCV server on Windows
1. Open the Windows Services snap-in.
2. In the right-hand pane, open DCV Server.
3. Choose Start.

Note
If the server is already running, the Start button is disabled.

Use the following procedure to configure the NICE DCV server to start automatically using the Windows Service snap-in.

To configure the NICE DCV server to start automatically on Windows
1. Open the Windows Services snap-in.
2. In the right-hand pane, open DCV Server.
Starting the NICE DCV Server on Linux

Use the following procedure to manually start the NICE DCV server using the command line.

**To start the NICE DCV server on Linux**

Use the following commands:

- RHEL 6.x and CentOS 6.x

  ```
  $ sudo service dcvserver start
  ```

- RHEL 7.x, CentOS 7.x, and SUSE Linux Enterprise 12

  ```
  $ sudo systemctl start dcvserver
  ```

Use the following procedure to configure the NICE DCV server to start automatically using the command line.

**To configure the NICE DCV server to start automatically on Linux**

Use the following commands:

- RHEL 6.x and CentOS 6.x

  ```
  $ sudo chkconfig --add dcvserver
  ```

- RHEL 7.x, CentOS 7.x, and SUSE Linux Enterprise 12

  ```
  $ sudo systemctl enable dcvserver
  ```

Stopping the NICE DCV Server

You can stop the NICE DCV server at any time. Stopping the server terminates all active NICE DCV sessions. You can't start new sessions until the server is restarted.

**Contents**

- Stopping the NICE DCV Server on Windows (p. 17)
- Stopping the NICE DCV Server on Linux (p. 18)

Stopping the NICE DCV Server on Windows

Use the following procedure to stop the NICE DCV server using the Windows Service snap-in.

**To stop the NICE DCV server on Windows**

1. Open the Windows Services snap-in.
2. In the right-hand pane, open DCV Server.
3. Choose Stop.
Stopping the Server on Linux

Use the following procedure to disable automatic NICE DCV server startup using the Windows Service snap-in.

To prevent the NICE DCV server from starting automatically on Windows
1. Open the Windows Services snap-in.
2. In the right-hand pane, open DCV Server.
3. For Startup service, choose Manual.

Stopping the NICE DCV Server on Linux

Use the following procedure to stop the NICE DCV server using the command line.

To stop the NICE DCV server on Linux
Use the following commands:

- RHEL 6.x and CentOS 6.x
  
  ```bash
  $ sudo service dcvserver stop
  ```

- RHEL 7.x, CentOS 7.x, and SUSE Linux Enterprise 12
  
  ```bash
  $ sudo systemctl stop dcvserver
  ```

Use the following procedure to disable automatic NICE DCV server startup using the command line.

To prevent the NICE DCV server from starting automatically on Linux
Use the following commands:

- RHEL 6.x and CentOS 6.x
  
  ```bash
  $ sudo chkconfig --del dcvserver
  ```

- RHEL 7.x, CentOS 7.x, and SUSE Linux Enterprise 12
  
  ```bash
  $ sudo systemctl disable dcvserver
  ```

Changing the NICE DCV Server TCP Port

By default, the NICE DCV server is configured to communicate over port 8443. You can specify a custom TCP port after you have installed the NICE DCV server. The port must be greater than 1024.

To allow NICE DCV clients to access your NICE DCV server over the standard HTTPS port (443), we recommend that you use a web proxy or load balancer as a frontend gateway to redirect client connections to the server.

Ensure that you communicate any port changes to your clients, as they need the port number to connect to sessions.
Changing the NICE DCV Server's TCP Port on Windows

To change the port used by the NICE DCV server, you must configure the web-port parameter using the Windows Registry Editor.

**To change the server's TCP port on Windows**

1. Open the Windows Registry Editor.
2. Navigate to the HKEY_USERS/S-1-5-18/Software/GSettings/com/nicesoftware/dcv/connectivity/ key and select the web-port parameter.
   - If there is no web-port parameter in the registry key, create one:
     a. In the left-hand pane, open the context (right-click) menu for the connectivity key and choose New, DWORD (32-bit) value.
     b. For Name, type web-port and press Enter.
3. Open the web-port parameter. For Value data, type the new TCP port number.
   - **Note**
   - The TCP port number must be greater than 1024.
4. Choose OK and close the Windows Registry Editor.
5. Stop (p. 17) and restart (p. 16) the NICE DCV server.

Changing the NICE DCV Server TCP Port on Linux

To change the port used by the NICE DCV server, you must configure the web-port parameter in the dcv.conf file.

**To change the server's TCP port on Linux**

1. Navigate to /etc/dcv/ and open the dcv.conf with your preferred text editor.
2. Locate the web-port parameter in the [connectivity] section, and replace the existing TCP port number with the new TCP port number.
   - If there is no web-port parameter in the [connectivity] section, add it manually using the following format:

   ```
   [connectivity]
   web-port=port_number
   ```
   - **Note**
   - The TCP port number must be greater than 1024.
3. Save and close the file.
4. Stop (p. 17) and restart (p. 16) the NICE DCV server.

Disconnecting Idle Clients

NICE DCV can be configured to disconnect idle clients who have not sent any keyboard or pointer input to the NICE DCV server for a specified period. By default, the NICE DCV server disconnects NICE DCV clients that have been idle for a period of 60 minutes.
You can use the following procedures to specify a custom idle timeout period.

## Changing the Idle Timeout Period on Windows

To change the NICE DCV server's idle timeout period, you must configure the `idle-timeout` parameter using the Windows Registry Editor.

**To change the idle timeout period on Windows**

1. Open the Windows Registry Editor.
2. Navigate to the `HKEY_USERS/S-1-5-18/Software/GSettings/com/nicesoftware/dcv/connectivity/` key and select the `idle-timeout` parameter.

   If there is no `idle-timeout` parameter in the registry key, create one:
   - In the left-hand pane, open the context (right-click) menu for the `connectivity` key and choose **New, DWORD (32-bit) value**.
   - For **Name**, type `idle-timeout` and press **Enter**.
3. Open the `idle-timeout` parameter. For **Value data**, enter a value for the idle timeout period (in minutes).

   **Note**
   To avoid disconnecting idle clients, enter 0 for the `idle-timeout` parameter.
4. Choose **OK** and close the Windows Registry Editor.

## Changing the Idle Timeout Period on Linux

To change the NICE DCV server's idle timeout period, you must configure the `idle-timeout` parameter in the `dcv.conf` file.

**To change the idle timeout period on Linux**

1. Navigate to `/etc/dcv/` and open the `dcv.conf` with your preferred text editor.
2. Locate the `idle-timeout` parameter in the `[connectivity]` section, and replace the existing timeout period with the new timeout period (in minutes).

   If there is no `idle-timeout` parameter in the `[connectivity]` section, add it manually using the following format:

   ```ini
   [connectivity]
   idle-timeout=time_in_minutes
   ```

   **Note**
   To avoid disconnecting idle clients, enter 0 for the `idle-timeout` parameter.
3. Save and close the file.

## Enabling GPU Sharing on a Linux NICE DCV Server

GPU sharing enables you to share one or more physical GPUs between multiple NICE DCV virtual sessions. For more information about sessions, see Managing NICE DCV Sessions (p. 28). Using GPU sharing enables you to use a single NICE DCV server and host multiple virtual sessions that share the server's physical GPU resources.
Note
GPU sharing is only supported on Linux NICE DCV servers.

Before You Begin
Before you begin, ensure that the following prerequisites are completed:

• Install the NICE DCV server on a Linux server.
• Install the NICE DCV dcv-gl and nice-Xdcv packages on the server.
• Ensure that the server has at least one supported NVIDIA GPU.
• Install the NVIDIA GPU driver on the server. Official NVIDIA drivers are required. The open-source NVIDIA drivers are not supported.
• Ensure that the NVIDIA GPU driver supports hardware-accelerated OpenGL.
• Install an X Server, and configure the Device and Screen sections in the xorg.conf file.

Note
You can use the nvidia-xconfig NVIDIA utility to automatically create an xorg.conf file and configure it for all the available NVIDIA GPUs.

You can install nice-dcv-gltest rpm package and run the test application to check whether the server is properly configured for GPU sharing.

To enable GPU sharing on the NICE DCV server,

1. Navigate to /etc/dcv/ and open the dcv-gl.conf with your preferred text editor.
2. Add the [display/linux] section and gl-displays parameter using the following format:

   [display/linux]
   gl-displays = [':xserver.screen_1',':xserver.screen_2']

   The following example shows the gl-displays parameter for two screens running on the default X Server session:

   [display/linux]
   gl-displays = [':0.0',':0.1']

3. Save and close the file.
4. Stop (p. 17) and restart (p. 16) the NICE DCV server.

Changing the TLS Certificate

NICE DCV automatically generates a self-signed certificate that is used to secure traffic between the NICE DCV client and NICE DCV server. This certificate is used by default if no other certificate is installed on your NICE DCV server. The default certificate includes two files, the certificate itself (dcv.pem), and a key (dcv.key).

You can replace the default NICE DCV certificate and its key with your own certificate and key.

To change the NICE DCV server’s TLS certificate

Place your new certificate and its key in the following location on your NICE DCV server:
Enabling Session Storage

Session storage is a folder on the NICE DCV server that clients can access when they are connected to a specific NICE DCV session. When you enable session storage for a session, clients can download files from, and upload files to the specified folder. This feature enables clients to share files while connected to a session.

Enabling Session Storage on Windows

To enable session storage, you must create the folder to use for session storage and then configure the storage-root parameter using the Windows Registry Editor.

To enable session storage on Windows

1. Create the folder to use for session storage. For example, c:\session-storage.
2. Configure the storage-root parameter.
   a. Open the Windows Registry Editor.
   b. Navigate to the HKEY_USERS\S-1-5-18\Software\GSettings\com\nicesoftware\dcv/filestorage/ key and select the storage-root parameter.
      If there is no storage-root parameter in the registry key, create one:
      i. In the left-hand pane, open the context (right-click) menu for the file-storage key and choose New, String.
      ii. For Name, type storage-root and press Enter.
   c. Open the storage-root parameter. For Value data, type the full path to the folder created in Step 1.
   d. Choose OK and close the Windows Registry Editor.
   e. Stop (p. 17) and restart (p. 16) the NICE DCV server.
3. Start the session and specify the --storage-root option. For more information, see Starting NICE DCV Sessions (p. 29).

Enabling Session Storage on Linux

To enable session storage, you must create the folder to use for session storage and then configure the storage-root parameter in the dcv.conf file.

To enable session storage on Linux

1. Create the folder to use for session storage. For example, /opt/session-storage/.
2. Configure the storage-root parameter.
a. Navigate to /etc/dcv/ and open the dcv.conf with your preferred text editor.
b. Locate the storage-root parameter in the [filestorage] section, and replace the existing path with the full path to the folder created in Step 1.

If there is no storage-root parameter in the [filestorage] section, add it manually using the following format:

```
[filestorage]
storage-root="/opt/session-storage/
```

3. Save and close the file.
4. Stop (p. 17) and restart (p. 16) the NICE DCV server.
5. Start the session and specify the --storage-root option. For more information, see Starting NICE DCV Sessions (p. 29).

### Configuring NICE DCV Authentication

By default, clients are required to authenticate against the server on which NICE DCV is hosted before connecting to a NICE DCV session. If the client fails to authenticate, they are prevented from connecting to the session. Client authentication requirements can be disabled to allow clients to connect to a session without authenticating against the server.

NICE DCV supports the following authentication methods:

- **system** — This is the default authentication method. Client authentication is delegated to the underlying operating system. For Windows NICE DCV servers, authentication is delegated to WinLogon. For Linux NICE DCV servers, authentication is delegated to PAM. Clients provide their system credentials when connecting to a NICE DCV session. Ensure that your clients have the credentials for the appropriate user accounts on the NICE DCV server.

- **none** — No client authentication is required when connecting to a NICE DCV session. The NICE DCV server automatically grants access to all clients attempting to connect to a session.

Make sure that your clients are aware of the authentication method used by the NICE DCV server, and that they have the information required to connect to the session.

### Configuring Authentication Windows

To change the NICE DCV server's authentication method, you must configure the authentication parameter using the Windows Registry Editor.

**To change the authentication method on Windows**

1. Open the Windows Registry Editor.
2. Navigate to the HKEY_USERS/S-1-5-18/Software/GSettings/com/nicesoftware/dcv/security/ key and select the authentication parameter.

   If there is no authentication parameter in the registry key, create one:

   a. In the left-hand pane, open the context (right-click) menu for the authentication key and choose New, string value.
   b. For Name, type authentication and press Enter.
3. Open the authentication parameter. For Value data, enter either system or none.
4. Choose OK and close the Windows Registry Editor.

Configuring Authentication on Linux

To change the NICE DCV server’s authentication method, you must configure the authentication parameter in the dcv.conf file.

To change the authentication method on Linux

1. Navigate to /etc/dcv/ and open the dcv.conf with your preferred text editor.
2. Locate the authentication parameter in the [security] section, and replace the existing value with either system or none.

   If there is no authentication parameter in the [security] section, add it manually using the following format:

   ```
   [security]
   authentication=method
   ```

3. Save and close the file.

Configuring NICE DCV Authorization

Authorization is used to grant or deny NICE DCV clients permissions to specific NICE DCV features. By default, the NICE DCV server grants the session owner full access to all features. However, you can specify custom permissions for your users using a custom permissions file.

NICE DCV Features

The following features can be referenced in the permissions file:

- display — Receive visual data from the NICE DCV server.
- clipboard-copy — Copy data from the NICE DCV server to the client clipboard.
- clipboard-paste — Paste data from the client clipboard to the NICE DCV server.
- file-download — Download files from the session storage.
- file-upload — Upload files to the session storage.
- mouse — Input from the client pointer to the NICE DCV server.
- keyboard — Input from the client keyboard to the NICE DCV server.
- audio-out — Play back NICE DCV server audio on the client.
- audio-in — Insert audio from the client to the NICE DCV server.
- printer — Print PDFs or XPS files from the NICE DCV server to the client.
- smartcard — Read the smart card from the client.

Permissions File

The permissions file defines the NICE DCV features to which users have access when they connect to a session. You can create a custom permissions file that defines what each user is allowed to do on a NICE DCV session. If you do not specify a customer permissions file, the NICE DCV server applies the default user permissions. Those permissions grant the session owner full access to all features, and deny access to all other users. For more information, see Creating a Permissions File (p. 25).
After you have created your custom permissions file, you can reference it when starting a new session using the --permissions-file option with the dcv create-session command. For more information about starting sessions, see Starting NICE DCV Sessions (p. 29).

Creating a Permissions File

You can create a custom permissions file using your preferred text editor. You might need to do the following when creating a custom permissions file.

Contents

- Import an Existing Permissions File (p. 25)
- Create Groups (p. 25)
- Create Aliases (p. 26)
- Add Permissions (p. 27)

Import an Existing Permissions File

The imports section is typically the first section of the permissions file. This section lets you reference and include existing permissions files. This enables you to incorporate previously defined NICE DCV permissions into your permissions file.

A permissions file can include multiple imports. An imported permissions file might import other permissions files.

To import an existing permissions file into your permissions file

Use the #import statement and specify the location of the file.

**Note**
The file's location can be specified using an absolute or a relative path.

- Windows NICE DCV server
  ```
  #import ..\file_path\file
  ```
- Linux NICE DCV server
  ```
  #import ../file_path/file
  ```

Example

The following statement imports a permissions file named dcv-permissions.file that is located in the NICE DCV installation folder on a Windows NICE DCV server using an absolute path:

```
#import c:\Program Files\NICE\DCV\dcv-permissions.file
```
Creating a Permissions File

[groups]

You can then create your groups below the section heading. To create a new group, provide the group name, and then specify the group members in a comma-separated list. Group members can be individual users, other groups, and operating system user groups.

```
group_name=member_1, member_2, member_3
```

**To add a user to a group**

Specify the user name.

**Note**

You can prefix the user name with `user:`.

**Note**

Windows domain user names can include a domain name.

```
group_name=user_1, user:user_2, domain_name\user_3
```

**To add an existing group to a group**

Specify the group name prefixed with `group:`:

```
group_name=group:group_1, group:group_2
```

**To add an operating system user group to a group**

Specify the group's name prefixed with `osgroup:`:

```
group_name=osgroup:os_group_1, osgroup:os_group2
```

**Example**

The following example adds the groups section heading and creates a group named `my-group` that includes individual users named `john` and `jane`, an existing group named `observers`, and an operating system user group named `guests`:

```
[groups]
my-group=john, user:jane, group:observers, osgroup:guests
```

Create Aliases

The `[aliases]` section of the permissions file lets you create sets of NICE DCV features. After an alias has been defined, you can grant or deny groups or individual users permissions to use it. Granting or denying permissions to an alias grants or denies permissions to all of the features that are included in it.

To create aliases in your permissions file, you must first add the aliases section heading to the file.

```
[aliases]
```

You can then create your aliases below the section heading. To create a new alias, provide the alias name, and then specify the alias members in a comma-separated list. Alias members can be individual NICE DCV features or other aliases.
Creating a Permissions File

**Example**

The following example adds the aliases section heading and creates an alias named `file-management` that includes the `file-upload` and `file-download` features, and an existing alias named `clipboard-management`.

```plaintext
[aliases]
file-management=file-upload, file-download, clipboard-management
```

**Add Permissions**

The `[permissions]` section of the permissions file lets you control user and group access to specific features or aliases.

To add permissions to your permissions file, first add the permissions section heading to the file.

```plaintext
[permissions]
```

You can then add your permissions below the section heading. To add a permission, specify the actor that it governs, the rule to be applied, and the features that it applies to.

**actor rule features**

The `actor` can be a user, a group, or an operating system group. Groups must be prefixed with `group:` and operating system groups must be prefixed with `osgroup:`. NICE DCV includes a built-in `%owner%` reference that can be used to refer to the session owner.

The following rules can be used in permissions statements:

- `allow` — Grants access to the feature.
- `disallow` — Denies access to the feature, but can be overridden by subsequent permissions.
- `deny` — Denies access to the feature and cannot be overridden by subsequent permissions.

The `features` can include individual NICE DCV features, aliases, or a combination of both. The list of features must be separated by a space. NICE DCV includes a built-in `builtin` alias that includes all of the NICE DCV features.

**Example**

The following example adds the permissions section heading and adds four permissions. The first permission grants a user named `john` access to the `display`, `file-upload`, and `file-download` features. The second permission denies the `observers` group access to the `audio-in` and `audio-out` features, and an alias named `clipboard-management`. The third permission grants the `guests` operating system group access to the `clipboard-management` and `file-management` aliases. The fourth permission grants the session owner access to all features.

```plaintext
[permissions]
john allow display file-upload file-download
group:observers deny audio-in audio-out clipboard-management
osgroup:guests allow clipboard-management file-management
%owner% allow builtin
```
Managing NICE DCV Sessions

You must create a NICE DCV session on your NICE DCV server that your clients can connect to. Clients can only connect to a NICE DCV server if there is an active session.

Topics
- Introduction to NICE DCV sessions (p. 28)
- Using the Command Line Tool to Manage NICE DCV sessions (p. 29)
- Starting NICE DCV Sessions (p. 29)
- Stopping NICE DCV Sessions (p. 31)
- Viewing NICE DCV Sessions (p. 31)

Introduction to NICE DCV sessions

Every NICE DCV session has the following attributes:

- **ID** — Used to uniquely identify the session on the NICE DCV server.
- **Owner** — The NICE DCV user who created the session. By default, only the owner can connect to the session.

NICE DCV clients need this information to connect to the session.

NICE DCV offers two types of sessions:

**Console Sessions**

Console sessions are supported on Windows and Linux NICE DCV servers.

Only one console session can be hosted on the NICE DCV server at a time. Console sessions are created and managed by the Administrator on Windows NICE DCV servers, and the root user on Linux NICE DCV servers.

**Note**
You can't run console and virtual sessions on the same NICE DCV server at the same time.

**Virtual Sessions**

Virtual sessions are supported on Linux NICE DCV servers only.

A NICE DCV server can host multiple virtual sessions simultaneously. Virtual sessions are created and managed by NICE DCV users. NICE DCV users can only manage sessions that they have created. The root user can manage all virtual sessions that are currently running on the NICE DCV server.

To use virtual sessions, ensure that you have properly installed and configured an X server. A new virtual X server instance is created for each session. Each session uses the display provided by its virtual server. This enables you to host multiple virtual sessions on a single NICE DCV server. To share hardware-based OpenGL across multiple virtual sessions, you must connect the virtual X server instance to the GPU by configuring the `dcv-gl.conf` file.
Using the Command Line Tool to Manage NICE DCV sessions

The NICE DCV server ships with a command line tool that can be used to start, stop, and view NICE DCV sessions.

To use the command line tool on a Windows NICE DCV server, navigate to the folder in which the \texttt{dcv.exe} file is located, \texttt{C:\Program Files\NICE\DCV\Server\bin\} by default, and open a command prompt window.

On Linux NICE DCV servers, the command line tool is automatically configured in the \texttt{$PATH} environment variable. This enables you to use the command line tool from any folder. Open a terminal window and type the command to execute.

Starting NICE DCV Sessions

By default, a console session is automatically created on Windows NICE DCV servers after installation. The default console session is owned by \texttt{Administrator}, and has a default session ID of \texttt{console}.

If you chose to prevent the automatic console session when installing the NICE DCV server, you need to create one manually. You can also enable or disable automatic the console session at any time after installing the NICE DCV server.

\textbf{Note}

Linux NICE DCV servers do not get a default console after installation.

If you are using a floating license on an on-premises or alternative cloud-based server and you exceed the maximum number of concurrent sessions supported by your license, you could get a \texttt{no licenses} error. If you get this error, stop an unused session to release the license and try again.

The NICE DCV server must be running to start a session. For more information, see Starting the NICE DCV Server (p. 16).

\textbf{Contents}

- Manually Starting Console and Virtual Sessions (p. 29)
- Enabling Automatic Console Sessions (p. 30)

Manually Starting Console and Virtual Sessions

You can start a NICE DCV session at any time. You can only run one console session at a time. If you are using a Linux NICE DCV server, you can run multiple virtual sessions simultaneously.

To create a console or virtual session on a Windows or Linux NICE DCV server

Use the \texttt{dcv create-session} command and specify the session type and a unique session ID.

The following options can be used with the \texttt{dcv create-session} command:

\begin{itemize}
  \item \texttt{--type=console|virtual}
\end{itemize}

This option is supported on Linux NICE DCV servers only. It specifies the type of session to be created, and can be either \texttt{console} or \texttt{virtual}. 

\textbf{Note}

You can't run console and virtual sessions on the same NICE DCV server at the same time.
Enabling Automatic Console Sessions

Enabling an automatic console session ensures that a console session is automatically created each time that the NICE DCV server starts. The automatic console session is owned by the NICE DCV user specified by the `owner` configuration parameter, and its session ID is always `console`.

**Note**

NICE DCV does not support automatic virtual sessions.

**To enable an automatic console session on a Windows NICE DCV server**

1. Open the Windows Registry Editor.
2. Navigate to the `HKEY_USERS/S-1-5-18/Software/GSettings/com/nicesoftware/dcv/session-management` key.
3. Create a `create-session` parameter:

   ```bash
   C:\> dcv create-session --owner dcv-user my-session
   ```

4. Enter the following command:

   ```bash
   $ sudo dcv create-session --type=console --owner dcv-user my-session
   ```
Stopping Sessions

4. Create an owner parameter:
   a. Open the context (right-click) menu for the session-management key in the left-hand panel and choose New, DWORD (32-bit) Value.
   b. For Name, type owner and press Enter.
   c. Open the owner parameter. For Value data, type the session owner's name and choose OK.

5. Choose OK and close the Windows Registry Editor.

6. Stop (p. 17) and restart (p. 16) the NICE DCV server.

To enable an automatic console session on a Linux NICE DCV server

1. Navigate to /etc/dcv/ and open the dcv.conf with your preferred text editor.
2. Add the create-session and owner parameters to the [session-management] section using the following format:

   [session-management]
   create-sessions=true
   owner="session_owner"

3. Save and close the file.
4. Stop (p. 17) and restart (p. 16) the NICE DCV server.

Stopping NICE DCV Sessions

A console session can only be stopped by the administrator on Windows NICE DCV servers, and the root user on Linux NICE DCV servers. A virtual session on a Linux NICE DCV server can only be stopped by the root user or the NICE DCV user who created it.

To stop a console or virtual session on a Windows or Linux NICE DCV servers

Use the dcv close-session command and specify the unique session ID:

```
dcv close-session session_id
```

For example, the following command stops a session with the unique ID of my-session:

```
dcv close-session my-session
```

Viewing NICE DCV Sessions

The administrator on a Windows NICE DCV server or the root user on a Linux NICE DCV server can view all active sessions running on the server. NICE DCV users can only view sessions that they have created.

To view the active console or virtual sessions on a Windows or Linux NICE DCV server
Use the `dcv list-sessions` command:

```
dcv list-sessions
```

The command returns a list of active sessions in the following format:

- **Windows NICE DCV server**

  ```json
  Processing command 'list-sessions'
  { "sessions": [ { "id": "session_id", "owner": "session_owner" } ] }
  ```

- **Linux NICE DCV server**

  ```text
  Session: session_id (owner: session_owner)
  ```
Troubleshooting NICE DCV

This chapter explains how to identify and troubleshoot problems that you might have with NICE DCV.

Topics
- Using the Log Files (p. 33)

If you need additional help, you can log a support ticket on the NICE Support Portal.

Using the Log Files

The NICE DCV log files can be used to identify and troubleshoot problems with your NICE DCV server. The NICE DCV log files can be found in the following location on your NICE DCV server:

- Windows server
  
  C:\ProgramData\NICE\dcv\logs\

- Linux server

  /var/log/dcv/

The NICE DCV server enables you to configure the verbosity level of the log files. The following verbosity levels are available:

- error — Provides the least detail. Includes errors only.
- warning — Includes errors and warnings.
- info — The default verbosity level. Includes errors, warnings, and information messages.
- debug — Provides the most detail. Provides detailed information that is useful for debugging issues.

Changing Log File Verbosity on Windows

To configure the log file verbosity, you must configure the level parameter using the Windows Registry Editor.

To change the log file verbosity on Windows

1. Open the Windows Registry Editor.
2. Navigate to the HKEY_USERS/S-1-5-18/Software/GSettings/com/nicesoftware/dcv/log/ key.
3. Open the level parameter by double-clicking. For Value data, type either error, warning, info, or debug, depending on the required verbosity level.
4. Choose OK and close the Windows Registry Editor.

Changing Log File Verbosity on Linux

To configure the log file verbosity, you must configure the level parameter in the dcv.conf file.
To change the log file verbosity on Linux

1. Navigate to /etc/dcv/ and open the dcv.conf with your preferred text editor.
2. Locate the level parameter in the [log] section, and replace the existing verbosity level with either error, warning, info, or debug.

   
   [log]
   level="verbosity_level"

3. Save and close the file.
The following table lists the parameters that can be configured to customize the NICE DCV server.

For Windows NICE DCV servers, the configuration parameters must be configured using the Windows Registry Editor. The parameters can be found by navigating to the HKEY_USERS/S-1-5-18/Software/GSettings/com/nicesoftware/dcv/ registry path and selecting the key specified in the Section/Registry key column. If the parameter is not located in the specified key, add it using the type specified in the Type column, and the parameter as the name.

For Linux NICE DCV servers, the configuration parameters must be configured in the /etc/dcv/dcv.conf file using your preferred text editor. The parameters can be found by locating the section heading specified in the Section/Registry key, column. If the parameter is not listed below the section heading, add it using the parameter_name="value" format.

<table>
<thead>
<tr>
<th>Section (Linux)/Registry key (Windows)</th>
<th>Parameter name</th>
<th>Type (Windows only)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Linux — [connectivity]</td>
<td>web-port</td>
<td>DWORD (32-bit)</td>
<td>Specifies a custom TCP port to be used by the NICE DCV server. The port number must be greater than 1024. The default port is 8443.</td>
</tr>
<tr>
<td>• Windows — connectivity</td>
<td>idle-timeout</td>
<td>DWORD (32-bit)</td>
<td>Specifies the number of minutes that clients can remain inactive before being disconnected from the server.</td>
</tr>
<tr>
<td>• Linux — [filestorage]</td>
<td>storage-root</td>
<td>String</td>
<td>Specifies the full path to the folder to be used for console session storage.</td>
</tr>
<tr>
<td>• Windows — filestorage</td>
<td>create-session</td>
<td>DWORD (32-bit)</td>
<td>Enables or disables the default console session. To enable the default console session, specify 1 (Windows) or true (Linux). To disable the default console session, specify 0 (Windows) or false (Linux). If the default console session is enabled, then you must also specify the owner parameter.</td>
</tr>
<tr>
<td>• Linux — [session-management]</td>
<td>owner</td>
<td>String</td>
<td>Specifies the owner for the default console session. Only specify this parameter if the create-session parameter is set to 1 (Windows) or true (Linux).</td>
</tr>
<tr>
<td>• Linux — [log]</td>
<td>level</td>
<td>String</td>
<td>Specifies the log file verbosity level. The verbosity levels are:</td>
</tr>
</tbody>
</table>

35
<table>
<thead>
<tr>
<th>Section (Linux)\Registry key (Windows)</th>
<th>Parameter name</th>
<th>Type (Windows only)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Linux — [license]</td>
<td>license-file</td>
<td>String</td>
<td>If you are using a floating license on an RLM server, use this parameter to specify the RLM server's port and hostname in the <code>port@hostname</code> format. If you are using an extended demo license, and you have not placed the <code>license.lic</code> file in the default location, use this parameter to specify the full path of <code>license.lic</code> file.</td>
</tr>
<tr>
<td>• Windows — license</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Linux — [security]</td>
<td>authentica</td>
<td>String</td>
<td>Specifies the client authentication method used by the NICE DCV server. The authentication methods are:</td>
</tr>
<tr>
<td>• Windows — security</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>string</td>
<td></td>
<td>• system — (Default) Client authentication is delegated to the underlying operating system.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• none — No client authentication is required. The NICE DCV server grants access to all NICE DCV clients.</td>
</tr>
</tbody>
</table>

• error — Provides the least detail. Includes errors only.
• warning — Includes errors and warnings.
• info — The default verbosity level. Includes errors, warnings, and information messages.
• debug — Provides the most detail. Includes detailed information that is useful for debugging issues.
Document History for NICE DCV

The following table describes the documentation for this release of NICE Desktop Cloud Visualization.

- **API version:** latest
- **Latest documentation update:** June 05, 2018

<table>
<thead>
<tr>
<th>Change</th>
<th>Description</th>
<th>Date</th>
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</thead>
<tbody>
<tr>
<td>Initial release of NICE DCV</td>
<td>First publication of this content.</td>
<td>June 05, 2018</td>
</tr>
</tbody>
</table>