This document is an instruction set to install and use Ansys Remote Solve Manager (RSM) with Ansys Workbench products, for Windows-to-Windows, client-to-remote server environments.

The document covers the officially supported Ansys product releases: 2021 R1, 2021 R2, 2022 R1, 2022 R2 and 2023 R1. The table below provides the conversion from Ansys release to Number; use the Number that corresponds to your Ansys Release when following these steps. Simply replace the version number for your installation in the various steps below; the version number is colored red.

Ansys Release	Number
2021 R1	v211
2021 R2	v212
2022 R1	v221
2022 R2	v222
2023 R1	v231

You must have administrative privileges to install the services required for RSM to work properly! They may also be required for troubleshooting.

Some steps have more information if Ansys Remote Cluster (ARC) or a third-party cluster scheduler, like LSF, PBS or Windows HPC in a head node/slave node system configuration, are to be used.

If the system configuration is a single remote machine, much of the bulleted text does not need to be executed. **Please read through the entirety of the step's directions to determine the steps required.**

This document will use Ansys Release 2019 R2, version Number v194 for demonstration. The steps for the officially supported Ansys product releases are the same... just replace the version number as required.

1. Ansys must be installed on the remote machine, and it must be the same version that you use for solving models. Multiple versions can exist on the same machine, but if you are using 2019 R2 to setup a model, for example, 2019 R2 must be installed on the remote machine to solve that model.

   - **If in a multi-node environment, Ansys can be installed on each node, or on a single shared location, visible to all nodes. In the latter case, extra configuration needs to be handled before running through any step after this first one and is not discussed here. Ask your Ansys Support Provider for details on doing this.**

2. On the remote machine, open a Windows command prompt (right click > Run As Admin) and copy/paste this command, with the quotes into it:

   "C:\Program Files\Ansys Inc\v194\RSM\bin\"AnsConfigRSM.exe -launcher

   Then, copy/paste these two commands consecutively, into the command window:

   "C:\Program Files\Ansys Inc\v194\RSM\ARC\tools\winx64\"installservice -arcmaster
   "C:\Program Files\Ansys Inc\v194\RSM\ARC\tools\winx64\"installservice -arcnode

- **If multiple users will use the remote machine and ARC is to be used, these three service commands must be executed.**

- **If a single user will use the remote machine, then only the first service command needs to be executed. However, having all three running will not cause issues.**

- **If using a third-party cluster scheduler, only the first service command needs to be executed, and ONLY on the head node.**

- **If using ARC in a multi-node environment, the launcher, master, and node services must be running on the head node. Then, the node service must be running on every other node.**

TROUBLESHOOTING TIP: if these services fail to install, verify the command prompt window was opened with administrative privileges. Right click on Command Prompt and choose Run As Admin. Simply having administrative rights assigned to the user account is not adequate.

3. Close the command window and verify the service is running in Task Manager's Services panel.

RemoteRegistry		Remote Registry
RetailDemo		Retail Demo Service
RmSvc		Radio Management Service
RpcEptMapper	1452	RPC Endpoint Mapper
RpcLocator	4488	Remote Procedure Call (RPC) Locator
RpcSs	1452	Remote Procedure Call (RPC)
RSMArcMasterService194	7516	Ansys RSM Cluster Master Service 2019 R2
RSMArcNodeService194	26140	Ansys RSM Cluster Node Service 2019 R2
RSMLauncherService194	19576	ANSYS RSM Launcher Service 2019 R2
RtkAudioService	3592	Realtek Audio Service
SamSs	1100	Security Accounts Manager
SCardSvr		Smart Card

- **These three services should only be present if using ARC in a multi-user environment. If single user or third-party cluster scheduler, only the RSMLauncherService### will be present.**

- **If using ARC in a multi-node cluster environment, the RSMArcNodeService### needs to be installed on each node of the cluster. Other configuration must be performed as well, which is not detailed here. Ask your Ansys Support Provider for details.**

- **In any instance of these services' presence, these must be running under the SYSTEM level account. This can be confirmed on the Details panel of Task Manager. Example shown here for the RSMLauncherService###:**

AGMService.exe	17732	Running	SYSTEM	00	2,672 K	Not allowed
AGSService.exe	17620	Running	SYSTEM	00	2,636 K	Not allowed
Ans.Rsm.Launcher.exe	7360	Running	SYSTEM	00	6,452 K	Not allowed
AnsysCloudCLI.exe	20344	Running	aaustin	00	17,280 K	Disabled
AnsysFWW.exe	7540	Running	aaustin	00	388,924 K	Disabled

TROUBLESHOOTING TIP: if using ARC in a multi-user environment, and the services are not running under SYSTEM, users that submit models to the remote machine may receive 'Access denied' errors. The ArcMaster and ArcNode services are run on a per-user basis if they are not set as SYSTEM-level processes. One user cannot use the services from another user.

4. Create a folder located on this machine. Name it something like *Ansys_remote_jobs*. Then, right click on this folder, select Properties, go to the Sharing tab, and click *Share…*
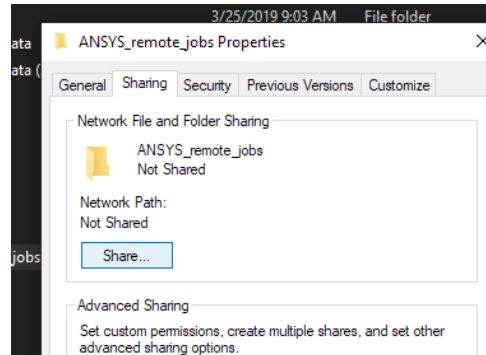
This opens a window, where you need to *Everyone* in the dropdown, then *Add*, then *Share*. This is the simplest option to allow multiple user access to a single directory for running Ansys models.
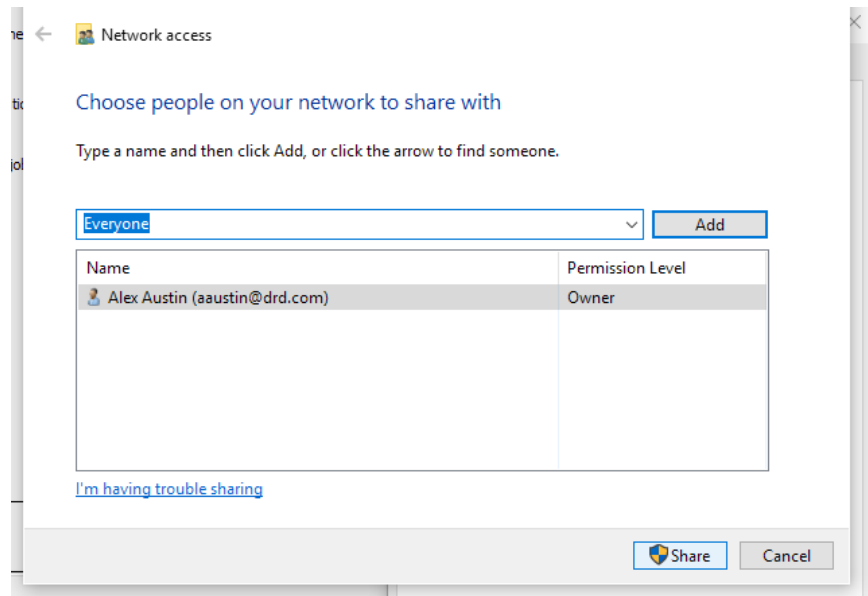

You should see another window that looks like this:

Your folder is shared.

You can e-mail someone links to these shared items, or copy and paste the links into another app.

Individual Items

📁 ANSYS_remote_jobs
\\BRONCO\ANSYS_remote_jobs
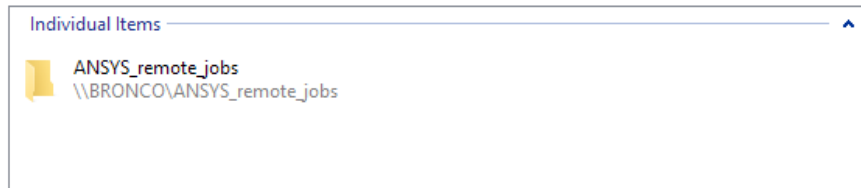
Take note of the directory location!!!

5. Go to your client machine and launch the RSM Configuration 2019 R2 application. At the top, click the 'Add HPC Resource...' button.
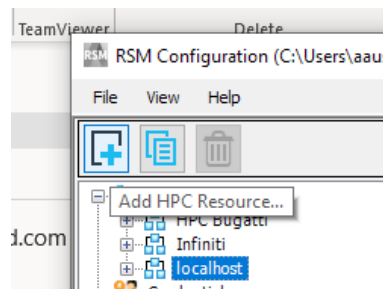
6. Add a name, set the 'Submit host' field to the remote machine's name and specify the OS (where it says 'Select...' to *Windows 64*, then hit 'Apply'. In this example, the machines name is BRONCO. Note this matches the first field in the share name from step 4 (\\BRONCO).

7. Click the File Management tab and select the option *Operating system file transfer to an existing network share*. This will be in the format \\servername\folder. **This is the directory location created in step 4!!!** Then hit 'Apply'.

- **This setting is ideal for solving on a single remote machine, for either FEA or CFD analysis.**

- **If configuring a remote cluster (using ARC or a third-party cluster scheduler) with multiple nodes, CFD models can use this single directory location. For FEA models, it's recommended to modify the HPC Side File Management options, so each node has local scratch space for the Ansys solver computations. In that case, this section would look like this:**

- **In this case, each node must have a directory *Ansys_remote_jobs* and it needs to be shared and visible to the head node of the cluster. Follow the same method in step 4 for sharing these folders.**

- **The 'D:' drive in this case is the drive letter on each node that has the shared directory. This must be consistent across all nodes.**

8. Click the Queues tab and then the button *Import/Refresh HPC Queues…*
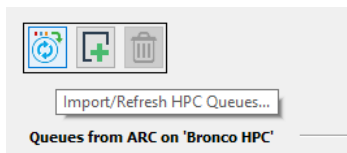
9. The application will ask you for credentials. These are your Windows login credentials used to log into the local client machine. You must include the domain before the username. In this example, the domain is DRD.

10. If the validation goes okay, you should now see an RSM Queue in the list. The name under *RSM Queue* can be changed to be more descriptive; in this case 'BRONCO HPC Mechanical'.

11. Click the 'Submit' button and this will test out communication to the remote machine, read/writability to the remote directory, and give an output of how this went. If all goes well, there should be a green check mark under *Status*.

TROUBLESHOOTING TIP: **if this test does not work properly (a red 'X' shows up under *Status*), try turning off the Windows firewall on the remote and client machines, then running this test again. It is not uncommon for Windows to block new applications automatically, and IT may need to allow some programs through.**

IT administrators can allow apps through the Windows firewall, as well as any virus scanning software. These apps are in the Ansys Inc installation directory, within the v###\RSM\bin and RSM\ARC\bin directories. The apps to allow through are:
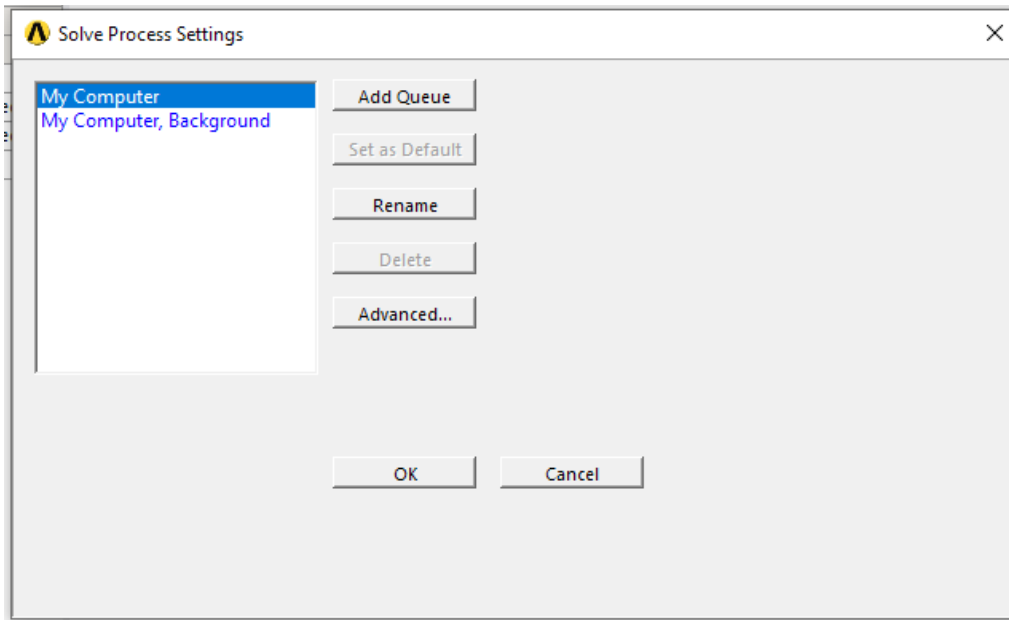*RSM\bin*
Ans.Rsm.UPHost.exe
Ans.Rsm.Launcher.exe
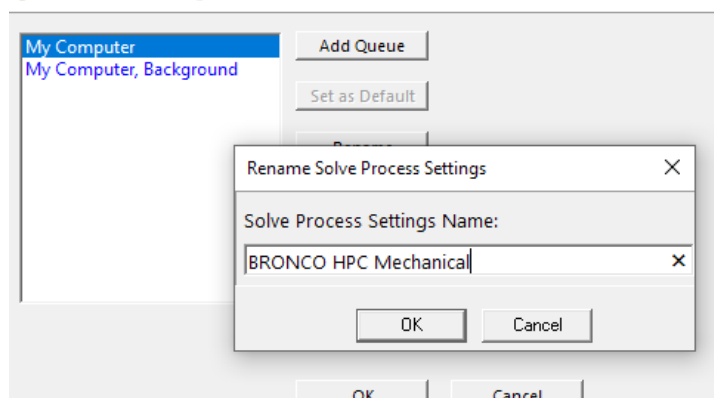
RSM\ARC\bin
ArcMasterService.exe
ArcNodeService.exe

This test must run properly before moving to step 12.

12. Next, open a Workbench project and go into the Mechanical application. Go to File > Solve Process Settings. The window should look like this:

Click 'Add Queue' and type in a name; this can be the same name as the RSM Queue in step 10.

13. Modify the *RSM Queue* field to match what was specified in step 10. Set the *License* field to one appropriate for your Ansys licenses and click 'OK'.

14. The next time you go to solve a model, you can use the dropdown arrow under the Solve button to select the remote machine.