LEOSTREAM™ ◡

# HOW TO CHOOSE A DISPLAY PROTOCOL FOR YOUR REMOTE DESKTOP USERS

About Display Protocols

A display protocol is a set of technologies that, in essence, make the remote desktop feel as if it is running on the local client device.

It is responsible for transporting and rendering the remote display to the local client device, as well as often handles other aspects of the end-user experience, like redirecting USB devices.

Selecting the right remote display protocol is an important part of every hosted desktop initiative. After all, the display protocol defines how end users connect to their hosted applications, and determines rendering performance. These two aspects have a big impact on your end users' experience, which is why choosing the best option is not something to take lightly.

With all that being said, in the context of designing the entire hosted environment, picking a display protocol isn't always top of mind. When people come to us who are exploring hosted desktop solutions they are often looking to us for guidance. As the provider of the industry's most comprehensive connection broker, Leostream is continuously evaluating potential display protocols for integration purposes. Unlike full-stack solutions, which come bundled with a display protocol, we remain vendor neutral and support a wide variety of third-party options. This ensures that our customers can make the best choice based on their specific requirements and utilize multiple display protocols. As such, we spend a significant amount of time analyzing and reviewing display protocols and their features and benefits. In this guide, we will be sharing our insights and providing considerations when comparing offerings.
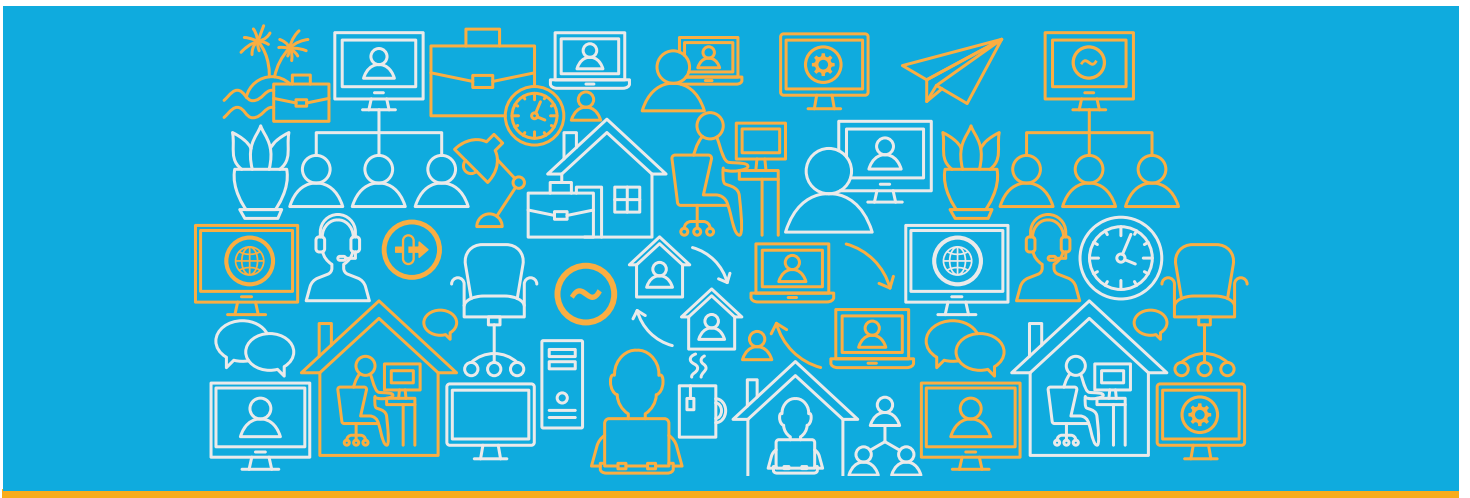
Finding the best fit: It's all about the end-user experience

In the past, choosing the right protocol hinged on striking a balance between a good end-user experience, the bandwidth available on the network, and the compute power supplied by the hardware. Since networks have gotten faster and bandwidth is more readily available, these factors are no longer major parts of the decision unless you know your users will be connecting from low-bandwidth areas where they could experience latency. If that's the case, you'll want to be extra mindful during the testing stage of evaluating protocols to ensure the solution addresses these elements adequately.

Historically, security has also been an important part of the discussion and a differentiator between vendors. The good news is that these days every protocol out there now encrypts screen transfer. While there are nuances associated with various encryption methods, all of the major players seem to sufficiently satisfy general security concerns.

So what really matters when comparing display protocols? What it comes down to is finding a solution that fulfills your end users' needs. Because your end user will be regularly interacting with the display protocol, choosing the right one can make or break the entire experience for them.

To best approach the decision, we recommend mapping out your user requirements and evaluating solutions based on that. Start by inventorying all the device types your end users have, and all the tasks they need to accomplish, including what they need to connect to. Will you have Windows, Linux, and MacOS on the remote side? Do you have to support mobile devices? Look for outlying cases both on what the users connect from and to, so you have a firm understanding of the workflows you need to accommodate and the level of performance required.

While this is not an exhaustive list, here are some points to contemplate:

- What are your end-user requirements for multi-media, USB device redirection, or other peripheral devices like Wacom tablets, etc.?

- Do you have different types of users, for example task workers that run word processing applications and power users running graphic-intensive applications? (More on this in the next section of this guide!)

- What operating systems are you planning to deliver on your remote desktops or use on your client devices? Are you planning to support BYOD and remote access? If so, make sure your chosen display protocol handles all possible client device types.

- Do you want to use Zero or thin clients? If you are using Zero clients, which display protocol does it natively support? If using thin clients, what operating system does it use and can you install additional client software?

- Do you need a display protocol that supports collaboration, where two users are simultaneously logged into the same session?

- Do users connect to workstations with a GPU or are you using a virtual environment that supports GPU passthrough or vGPU?

When it comes to the end-user experience, the main requirement to focus on is performance. For task workers and those who need access to productivity applications, a free or low-cost display protocol is likely suitable, such as those provided by VNC and RDP. We refer to these as commodity protocols because they are suitable for a wide range of scenarios.

However, sometimes VNC or RDP won't cut it. If you have users who create 3-D renderings, build CAD models, edit media, or do a host of other graphic-intensive tasks, then you need a more advanced alternative. For providing users with a consistent "at-desk" experience, you'll need a high performance display protocol like HP ZCentral Remote Boost (highlights include video and web flash animations), Teradici PCoIP (defined colors and distortion-free graphics), Mechdyne TGX (adored by engineers, designers, and creators) and RemoteFX (straight from Microsoft so ideal when working in Azure) and NoMachine (great for Mac users).

What are popular display protocols?

Many times, prospective customers come to us stating that they need a full-stack VDI solution like those offered by Citrix and VMware. After further conversations, often what they are really after is the display protocol locked into that stack - Citrix provides HDX and VMware has PCoIP and Blast.

Outside of those stacks, there are many other options, which we alluded to previously. Here is a list of the popular offerings, all of which Leostream supports. More often than not, our customers find that it's most advantageous and cost effective to include third-party protocols like those outlined below into the design. (High-performance protocols are marked with an *).

- **VNC** (RealVNC, TigerVNC, TightVNC, and UltraVNC) – VNC is an established offering that is tried and true. While not a high-performance display protocol, it is often acceptable for task workers, especially those running MacOS or Linux. Free versions are available and it works well with open source solutions.

- **Microsoft RDP and RemoteFX** (including FreeRDP, xrdp, and rdesktop clients) – This display protocol is often a default for task workers. For Microsoft-based organizations or those running on Azure it's a logical choice because RemoteFX is wrapped into licensing and many options are free!

- **HP ZCentral Remote Boost (RGS)*** – Formerly HP RGS, this display protocol supports Windows and Linux and has been a go-to amongst our customers in the financial industry, particularly with financial traders. It is also a hit amongst artists in the media and entertainment industry and employed by some customers within the oil and gas sector. It's known for collaboration features and also for giving end users some control over fidelity and performance.

- **Mechdyne TGX*** – This display protocol has become popular in the oil and gas industry for providing pixel-perfect rendering which is critical for engineers. TGX also offers collaboration tools and runs on both Windows and Linux.

- **NICE DCV***- Owned by AWS, NICE DCV is a common choice for those hosting desktops in the cloud. This high performance protocol leverages GPU and is great for AWS initiatives, but can also be used on premises.

- **NoMachine*** – Another high performance display protocol, NoMachine, is well received by MacOS and Linux users and also works with Windows. A key feature is its multi-user support, which allows multiple independent sessions to run on a single machine.

- **Scyld Cloud Workstation*** – Scyld is a mature offering with MacOS support and is also popular amongst artists in the media and entertainment industry. Its HTML-5 client has some advanced features including multi-monitor display.

- **Teradici PCoIP (Cloud Access Software and Remote Workstation Cards)*** –Teradici has a strong reputation for security, specifically with regards to handling Zero clients. PCoIP is considered a premier option for the media and entertainment industry and the display protocol also has a loyal following in the government sector.

Integrating a Third-Party Protocol into your Hosted Desktop Initiative

Leostream is dedicated to developing its software to best suit the needs of customers, including those with complex workloads and visualization requirements. Many of the protocols that we integrate our software with are extremely specialized, and are used in the engineering, high-finance, and oil and gas industries where one misplaced pixel can cost the enterprise millions of dollars. In addition to supporting all of the protocols listed in the previous section, our company is continuously vetting new vendors for integrations.

Is One Display Protocol Enough?

A key advantage of the Leostream™ Platform is that you can leverage multiple protocols in a single environment. This means that you do not have to commit to a single vendor. This is important because you may not find a one-size-fits-all solution for your entire user-base — and that's okay! Most of our large or more complex deployments are utilizing more than one display protocol. The goal is to find the best protocol for each scenario and workflow. Many of our customers are able to save money and provide a better end-user experience by having a mix of protocols. For example, instead of overpaying for users who work with text files, assign them a commodity protocol and save the advanced protocol for those who need high-end visualization.

Using Leostream, end users are able to connect to their desktops or applications via nearly any display protocol. They can also launch connections from any device, including thin clients, Zero clients, Chromebooks, web browsers, and mobile devices.

IT administrators within Leostream can configure how connections are made and using which display protocol through the use of desktop pools, plans, and policies. These features provide granular control and the flexibility to customize the desktop environment. For example, you can group users together with advanced visualization needs into a desktop pool and assign high-powered workstations with a graphic-heavy display protocol. You can then separate out task workers who only require a commodity protocol into another pool. When multiple display protocols are in place, you can define how the display protocols should be prioritized and made available to users connecting to workstations.

Key Takeaways

The success of your remote access or hosted desktop initiative is directly tied to choosing the right protocol. The best way to narrow down your choices is by understanding the workflows of your end-users and accommodating their requirements. While full-stack vendors include a built-in display protocol, this route isn't always best. It can be more effective from a cost savings and productivity standpoint to integrate third-party display protocols into your design. This way you can customize the experience for your end users. It's not uncommon for organizations to incorporate multiple display protocols into environments. Leostream makes it easy to leverage third-party protocols and to manage the users' connections to remote workstations and hosted resources.

Test, Test, Test!

As with all technology, scope out your options and evaluate them in your environment. We offer a free trial, which allows you to test you initial requirements. Keep in mind that Leostream allows you to employ more than one protocol. If you need a recommendation or an introduction to a particular vendor, please contact us for assistance.

About Leostream

Leostream provides the critical connection-broker technology required for institutions to achieve successful large-scale remote access, VDI, hosted desktop, or hosted application environments in both private and public clouds. The Leostream Connection Broker is the industry's most widely deployed vendor-independent connection broker, enabling enterprises to integrate the complex array of clients, back-end systems and protocols required for successful hosted desktop and application deployments.

For sales inquiries or to request a free trial, email: sales@leostream.com