# Application Note – AN109
Implementing Pop Up Alarms with VNC

Pixelmetrix
corporation

Martin Janzen,

Senior Engineer, Pixelmetrix Corporation

DVStation provides a popup alarm message box which can be duplicated or customized to contain any number of user-defined messages. Once defined, popup message boxes are globally available as alarm actions – to be invoked on any type of alarm or error event. The popup message functionality is also available for remote interface clients using the VNC interface. This application note explains the relationship between the popup message box and the VNC user interface.

LocalPopup

The current LocalPopup script works by running a application called xmessage, and points it at the DVStation's touchscreen (DISPLAY=:0.0, in X Window System terminology, or "-display :0.0" from the command line).
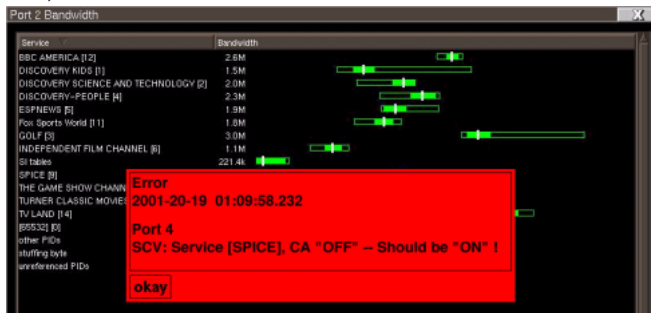
With only a simple modification to the LocalPopup script, it is possible to create a RemotePopup script,which, when activated, runs xmessage just as for LocalPopup – except that it points it at a remote X server. The address of the remote X server is hard-coded into the script (eg. DISPLAY=192.168.15.24:0.0).

VNC Architecture

For every separate VNC desktop (ie. the shared desktop, and each additional one you create by connecting to port 5901) the DVStation runs a VNC server process called Xvnc.
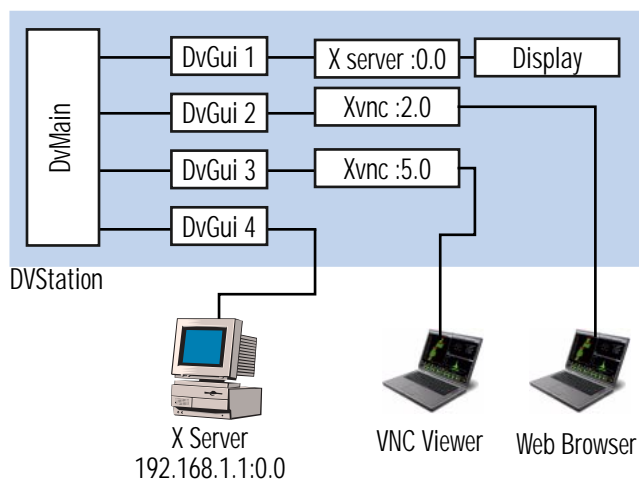
To an X application like DvGui, this process *looks* just like a real X server – only instead of talking to an actual graphics card over the PCI/AGP bus, this X server is talking to a remote VNC viewer client (or browser) over the network.

The Xvnc server with display number :2.0 is the shared VNC desktop. Creating a RemotePopup script for this desktop is no different than creating one for a remote X server. Just point the display at :2.0 instead of (say) 192.168.15.24:0.0.

For the non-shared VNC desktops, though, display numbers are assigned on the fly, every time a new connection is made to port 5901. So the question is, how do you know where to point xmessage's display?

In general, you don't. There's absolutely no way to tell DvMain, "When alarm XXX happens, send a RemotePopup message box only to *my* VNC desktop!" DvMain, and by extension, the alarm scripts it runs, doesn't know which display number you're connecting from.

Instead, you can take a guess – simply point xmessage at :1.0. This might work, as long as there's never more than one non-shared VNC desktop in existence at any one time, and as long as display number :1.0 was available when that desktop was started. This is not a reliable solution.

Or, you can launch multiple xmessage processes, pointing them at *all* Xvnc servers -- possibly excluding the shared :2.0 Xvnc server, if you prefer. Processes whose display points to nonexistent Xvnc servers will simply die quietly.

Maybe this is acceptable for your application; maybe the other VNC users will find the popups annoying.

Or, if you wanted to set up, say, a non-shared but permanent VNC viewer client running on a big control room display, you could accomplish this by creating a separate, fixed Xvnc process for it – just like the current shared display. To do this, create a file /usr/local/dvstation/etc/dvmon.conf.local, containing the lines:

```
# Start yet another VNC server on port 5907.
vncrun :7
DvGui -display :7 -no-wm -no-touchscreen -no-sound -show-cursor
```

Now you can write a ControlRoomPopup script which points xmessage to DISPLAY=:7.0 instead!

Remote Problems, Remote Monitoring

The rising complexity of the network and its problems lies in direct conflict with the changes in organizational structure driven by economic realities. Today, the few skilled resources broadcasters are left with are being centralized to a few key locations. Problems *in the field* must often be resolved by operators on site – frequently with help over the phone from an engineer in the central office.
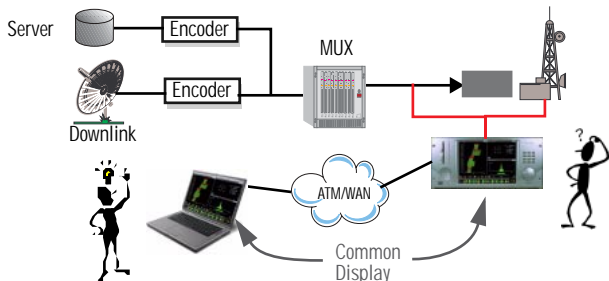
Operators with many geographically distributed facilities have additional problems where each of the many locations under remote control can have several downlinks, each with several transport streams, each possibly carrying many programs.

Performance and fault information must not be relegated to a single screen on a single device – but instead be widely available wherever it is needed. That could be from the monitoring of signals from un-staffed remote sites to the convenient control of systems in a facility through a corporate LAN, over the Internet, or even via dial-up analog modem.

DVStation

DVStation provides monitoring for RF, MPEG-2 transport stream, and content within an easy-to-use and integrated environment. Offering the highest port density in the industry, DVStation is ideal in environments with *many signals in one place* – such as satellite uplink centers, DTH operators, or cable head ends.

The design features plug in line interface modules which extract the MPEG-2 transport stream from the native RF or telecom signals and pass that data to a TSP – Transport Stream Processor. All modules provide monitoring capability on the physical layer. For RF interfaces (QPSK, QAM, COFDM, etc.) this provides an easy indication of overall modulation health. The 155 Mb/s ATM optical interface extracts an MPEG transport streams from several VP/VC's in addition to detecting physical layer errors and Sonet/SDH parameters.

DVStation-Remote

Ideal for remote deployments with *a few signals in many places*, the DVStation-Remote consists of a 1U control unit and up to four interface adaptors. Remote diagnostics can be conducted simultaneously from several locations, or alternatively staff can access telemetry directly by attaching a standard keyboard and CRT.

Log files and recorded transport streams can be accessed remotely or downloaded for further analysis.

DVStation-IP

The Pixelmetrix DVStation-IP, a world first of its kind provides advanced video and content analysis and monitoring functionality for IP networks. The compact 1RU form features a multi-speed 10, 100, and 1000 Mb/s interface (gigabit ethernet).

DVStation-Pod

Featuring the same software and user interface of the DVStation and DVStation-Remote, the DVStation-Pod product line consists of several book sized modules containing the interface circuitry. Each module connects to a laptop or desktop PC.

Light and portable, DVStation-Pod offers all the power and functionality of its bigger brothers in an extremely affordable package.

For More Information

To learn more about the DVStation, request a demo, or learn how Pixelmetrix might help you optimize video network integrity, contact us today!

On the Internet: sales@pixelmetrix.com
                    www.pixelmetrix.com

North America: 1-866-PIXEL-US
Europe: +41-79742-7454
Asia Pacific: +65-547-4935

About the Author
Martin Janzen is Senior Software Architect with Pixelmetrix Corporation, manufacturer of the DVStation, a preventative monitoring solution for digital broadcast networks.