



**POWERFUL CONTENT DISPLAY and MANAGEMENT
SOLUTIONS** for Large-Screen and Multi-Screen Environments



LG's webOS™ with Useful

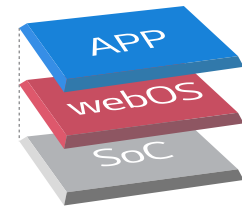
Large-Screen and Multi-Screen Environments

Certain environments such as control centers, sportsbooks, transportation terminals, retail centers, and educational institutions depend on large-screen or multi-screen installations to deliver content. And while the choice of displays is essential, it is only the beginning of a complete content delivery solution that effectively manages the content displayed on every screen within the network. LG's webOS™ Signage and Useful's Visual Networking Platform work together to create a powerful content display and management solution.

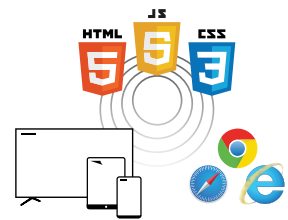
webOS Signage

LG's webOS Signage is a powerful and versatile platform that can enable the development and use of third-party software applications. These applications, such as digital signage content management systems, run directly on LG "smart" displays without the need for an external computing device. This is made possible by an embedded SoC (System-on-Chip) processor within select LG commercial-grade displays, running the webOS operating system. By combining computer processing and application execution into the display, users can harness the power of the webOS Signage platform for a wide variety of solutions.

Solution Stack

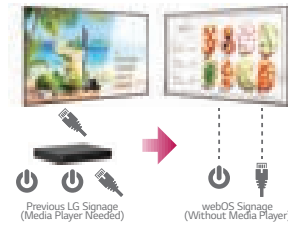


Web Based Standards



webOS Signage utilizes common web standards including HTML 5, JavaScript, and CSS.

Integrated Media Player



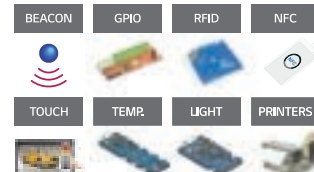
Embedded System-on-Chip (SoC) eliminates the need for an external media player.

Remote Device Management



webOS Signage provides tools for easy remote control and access to the display capabilities.

Interactive Applications



Supports connection to external devices and sensors for interactive application.

Platform Security



Platform features provide protection against outside access, enhancing file integrity and network security.

figure 1 - dual2K 196" (2 x108") Ultimate Business Display



Screen images are simulated.



The Userful Visual Networking Platform

Userful's Visual Networking Platform is a software defined Enterprise AV-over-IP solution. It is open, adheres to IT standards, runs on LG's webOS and requires no proprietary hardware.

Userful is unique in that it allows individual business units to manage the AV content they need as a part of their daily workflow while ensuring IT teams retain full control over the solution as a whole including infrastructure, security and network management. Users can route any source content to any screen globally for operational excellence ensuring the right people have the right information at the right time. It does this while providing enterprises with maximum scalability, security, and manageability.

Scalability: Userful's platform can be set up in the cloud, on-premises or in a hybrid configuration. Because Userful is a software defined solution that is integrated into webOS displays, customers are freed from the costs and restrictions of proprietary hardware.

Security: Userful incorporates best practices for security including Single Sign On and LDAP integration. Its use of standard hardware and network protocols allows for integration into customers' existing security practices.

Manageability: customers receive a single, manageable platform for content and service delivery that provides upgradeability, remote manageability, remote accessibility, diagnostics, and analytics.

figure 2 - Userful software delivers manageability, scalability and security.



Userful's Solution Delivers the Following Benefits:

No costly proprietary hardware is necessary

On-premise deployments use commercially available off the shelf servers rather than proprietary hardware

Stream any source to any display, any time, and in real-time including secure sources, physical local sources, IP video streams and desktop applications, even across multiple sites

Hyper Scalable: quickly and efficiently expand AV sources and displays using existing infrastructure

Industry Leading Total Cost of Ownership: reduce TCO by eliminating unnecessary hardware and simplifying infrastructure

Future Proof: The Userful Software as a Service (SaaS) model ensures customer deployments are always up to date with new features, upgrades and updates included

Display Choices for Different Environments

LG LCD VIDEO WALLS

With high brightness, wide viewing angles, and extremely thin bezels, LG Video Wall panels enable a wide range of large displays with commercial-grade durability for up to 24/7 operation. Advanced IPS screens produce images as they were intended to be seen across a wide viewing angle. The unique design of LG video wall tiles allows for a custom, virtually seamless video wall with bezels less than 2mm thick (select models), while advanced daisy chaining and the LG webOS™ Signage platform enable nearly limitless content creation and management when paired with Userful's technology solution.

LG DVLED SCREENS – ULTIMATE & CUSTOM

With panels tiled together comprising thousands of LED pixels, LG Direct View LED screens provide large, immersive displays without the seams of LCD video walls. The LG Bloc and MAGNIT panel modules create LG Ultimate and Custom video displays that are powered by LG's webOS 4.1 system-on-chip platform.

The Ultimate Business Display

Because selecting the right Direct View LED display can sometimes be complicated, LG created the DVLED Ultimate Business Display. These fully kitted Direct View LED displays come in a wide range of options to satisfy most installations. Simply select the right display(s) based on Environment (indoor or outdoor), Resolution, and Display Size.

Each display solution ships pre-configured with all the components needed for full operation. Ultimate Business Display options include fixed resolutions ranging from Full HD up to 8K Ultra HD, nine sizes from 81 inches to as large as 393 inches (32.75 feet), and aspect ratios in both 16:9 and 32:9 ultra-stretch formats. All of them are compatible with Userful's solution. Each fully pre-configured display includes all necessary components and an LG intelligent controller to make system integration a breeze. The entire system ships in custom-designed, wheeled ATA flight cases so that everything arrives securely with no need for forklifts or pallet jacks to bring the display inside.

Custom DVLED Displays

Some environments demand custom screen sizes. A custom DVLED screen can take advantage of irregular spaces or even curved spaces to transform an environment from dull or odd to captivating and valuable. With LG Bloc or MAGNIT DVLED modules, these custom solutions work seamlessly with Userful and offer advanced setup and content management features.

figure 3 - 55VL5F- 55" 3.5mm Narrow Bezel Video Wall



figure 4 - 2K FULLHD 108" Ultimate Bluisness Display



figure 5 - LAC Series Premium Curved Indoor DVLED



Putting It All Together

Traditional large video walls or DVLED screens are limited in resolution and content layout by the video processors (or media server). **LG webOS & Useful overcome these limitations and aren't limited to a particular resolution or to specific content layout parameters.** There is virtually no limitation to the content sources for the webOS-based LED walls, video walls, and standalone displays. The contents could range from live data, video, dashboards, RTSP streams, camera feeds, browsers, desktops and more, supporting a wide variety of enterprise use cases.

Multi-Screen Video Wall (LCD) Solution

LG webOS smart platform is compatible with Useful's visual networking platform. The "uclient" software is installed on LG's webOS video wall upon installation. To take full advantage of the features, make sure the webOS version is 4.0 or higher.

Indoor DVLED Screen Solution

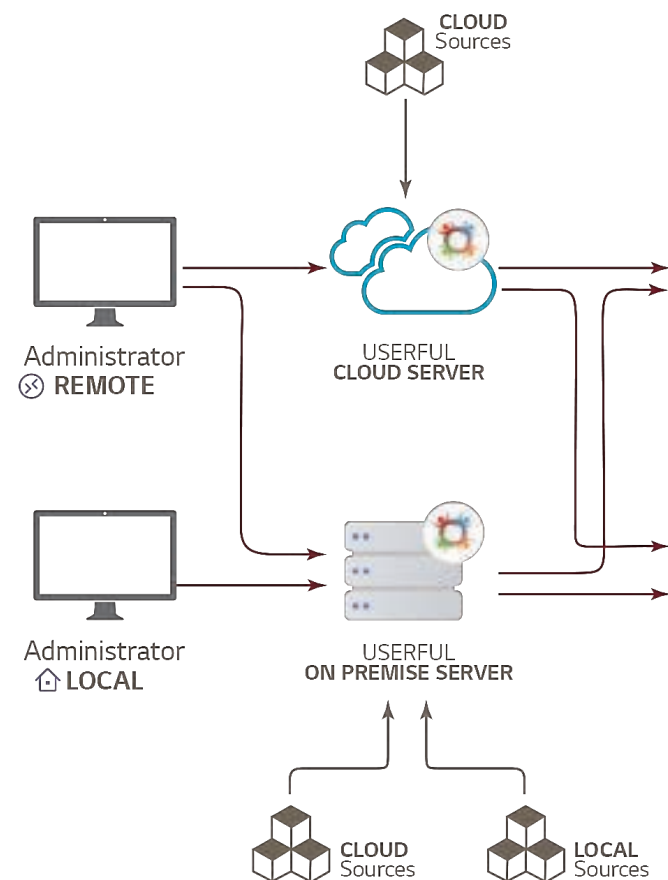
LG DVLED displays with webOS4.1 series are compatible with Useful's software solution. In this installation, LG's system controller receives A/V content from the Useful server or directly from the sources. In most cases, one controller can handle resolutions equal to or less than 3840x2160 resolution. More than one controller will be needed for higher resolution if the multi-screen resolution either exceeds 4K or exceeds 2160 P. (Likewise 3840 in the Y direction).

Global Management

Useful is a globally manageable solution that allows administrators to securely manage, monitor and even interact with systems anywhere in the world. Useful enables IT teams to scale their visual display infrastructure across multiple locations and even countries. Local teams can control content and the AV applications deployed while IT teams retain control over the entire solution including their network and infrastructure.

Useful offers integrated AV applications for a diverse range of business needs including Command and Control for Operation Centers and Mission Critical Applications as well as Emerald Signage, a Content Management System (CMS) for digital signage.

figure 6 - Choose cloud or On-Premise Server or a hybrid combination



CONTROL ROOM NETWORK OPERATIONS



CONTROL ROOM SECURITY OPERATIONS



DIGITAL SIGNAGE CORPORATE COMMUNICATIONS



DIGITAL SIGNAGE CAMPUS COMMUNICATIONS



PUBLIC DISPLAY CORPORATE LOBBIES



PUBLIC DISPLAY ARTISTIC VIDEO WALLS



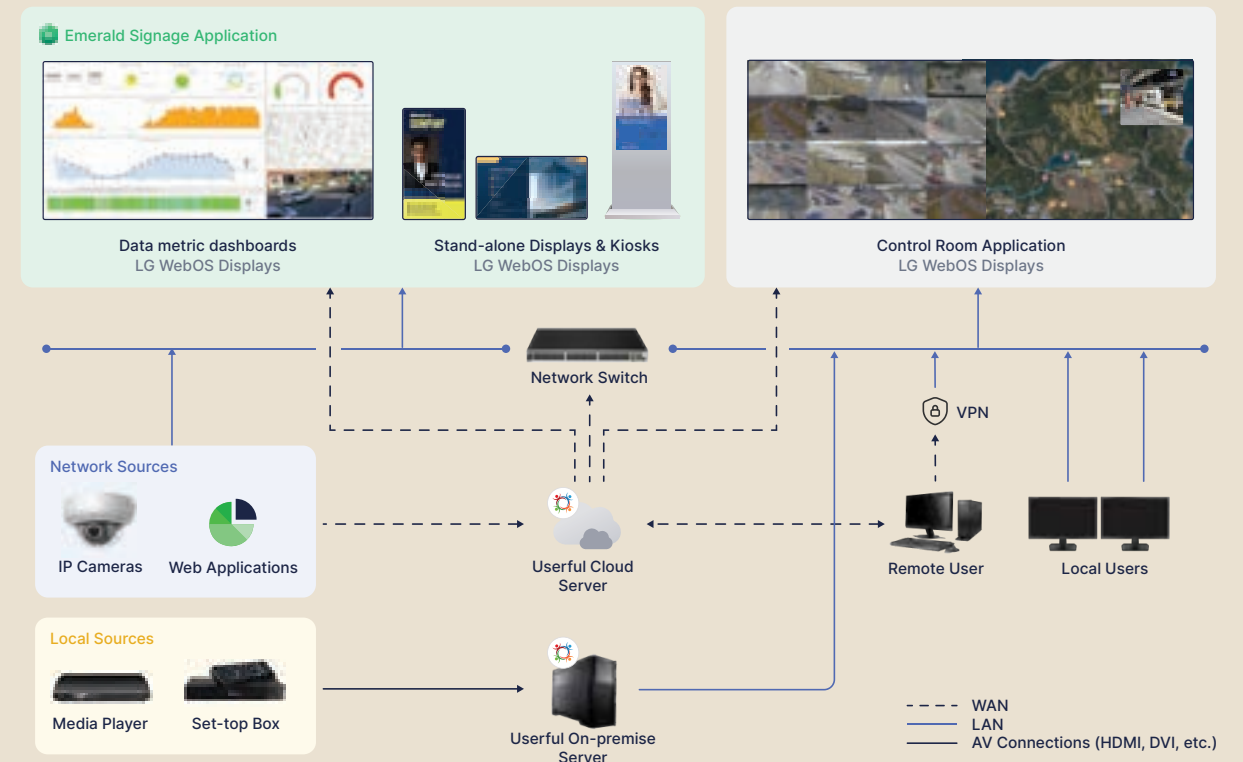
Useful Command and Control

Useful Command and Control is as intuitive as it is powerful. Simple point and click functionality empowers operators in control rooms, network and security operation centers and any other mission critical environment. They can easily deploy any source to any destination, including combinations of LG screens and LG video walls. Operators can interact with this content on their desktops, on a video wall or even from a remote location while maintaining an overview of the other information sources on display. An unlimited number of sources that can be shared to any LG display or groups of displays. With Useful's Command and Control solution, organizations benefit from a platform that incorporates visual collaboration across the entirety of their organization and not just within the control room itself.

Emerald Digital Signage

Useful Emerald Signage is one of the AV applications that is integrated into the Useful platform. It enables teams to easily create engaging digital signage for LG displays and video walls. Organizations get access to a full suite of content creation tools to effortlessly deploy customer and team communications, special announcements, emergency alerts, data metrics dashboards as well as infotainment including weather, news and social media.

figure 7 - LG webOS-based and Useful Solution





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