Smart Bus Systems

The Smart Bus system connects buses and moving vehicles to a management centre to view on-board cameras and access live tracking and vehicle diagnostics.

Technology now enables a fully integrated vehicle movement and management system that will give greater than ever efficiencies, provide system level security and enhance safety for operators and passengers.

Our system delivers a full set of integrated, on-board features that are both backwards compatible and future proofed for next generation technology.

Our Command & Control management centre will provide you with instantaneous full visibility of fleet operations, providing situational awareness to respond to any event. Alternatively you can connect and integrate into an existing management centre.

Live HD video from on-board cameras internally & externally

GPS Tracking

WI-FI Passenger WiFi

On-board Digital Signage for advertising promotions and journey information

Driver Panic Button

Driver Display for Traffic / Navigation

Live Vehicle Engine Diagnostics reporting

Bus Stop displays for advertising and Arrival Time information

Live Surveillance Video

HD video has very large data-rates which is very costly to both transmit from remote sites and store for long durations. Often it is not possible to send HD video from remote locations due to non-existent or slow or congested cellular infrastructure.

Using state of the art video compression technology, the cost of storage and transmission is greatly reduced, enabling them to be streamed live over mobile networks such as 3G/LTE/satellite modem. The on-board computer acts as an Omni Compressor for up to eight Full-HD IP cameras recording internally for up to 90 days.

When the bus enters the depot the stored video footage is uploaded to a VMS over a wired/wireless network connection, which it senses automatically. This can be encrypted to protect the data.

At any time the video from any of the eight cameras may be streamed live on demand. Multiple streams may be accessed live simultaneously depending on the speed of the data connection available. This allows real-time events to made available in a Command & Control centre to manage incidents as they happen.
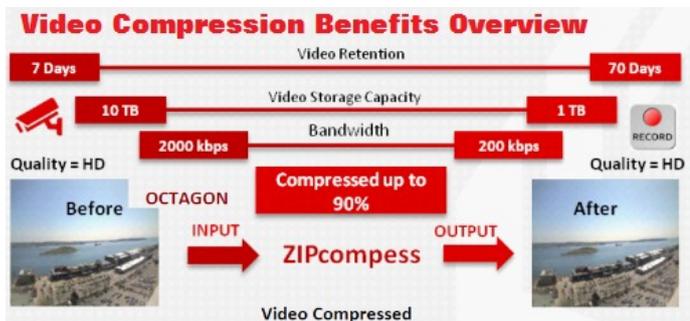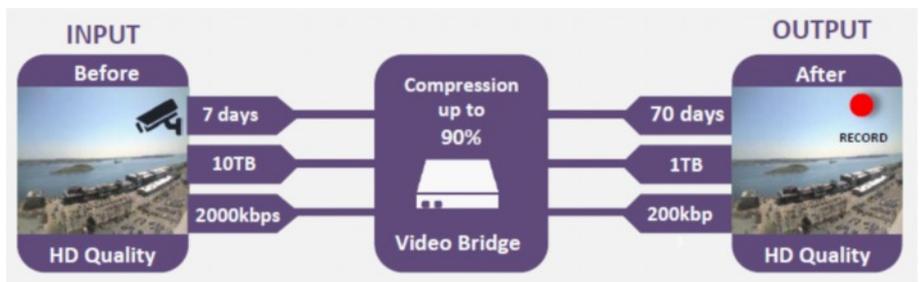

The video streams are compressed using the Omni Compressor patented algorithms, yet made available for either download or live streaming in their original formats. Up to 95% compression is given, depending on the amount of motion in the video frame (with much motion compression can reduce to 50-70% - still enabling streaming to take place).


Tracked Bus Infrastructure

Locations of all vehicles will be displayed in real-time on an interactive map in a management centre, either for basic viewing or integrated into a full Smart City platform. Smart analytical tools will provide customers with an enhanced experience showing real-time trip information whilst riding the bus, standing at a bus stop, or even online from anywhere.

Tracking devices on vehicles which use cellular networks can be replaced with the on-board connected infrastructure which can query the GPS network and send its location over the data network without incurring SMS charges.
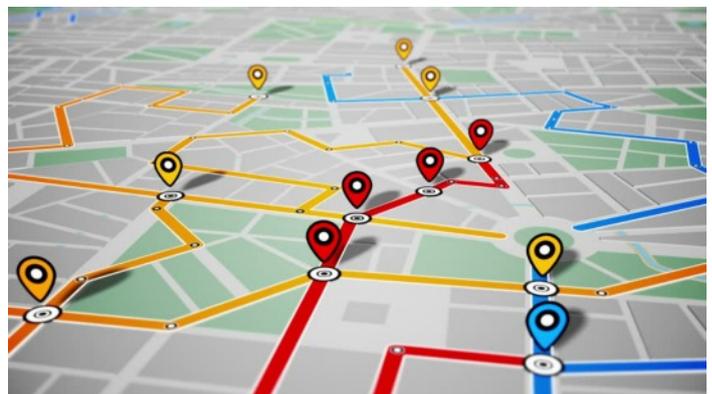
On-Board Diagnostics

Real-time presentation at the management centre of the vehicle operating data, fuel levels, and engine performance will enable right time servicing and total fleet management.
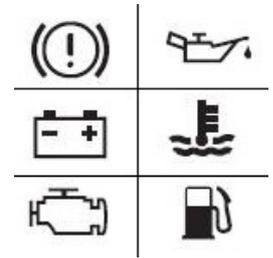
Driver Alarms & Communications

A Panic Alarm button provided to the driver of the vehicle will trigger immediate alerts to the management centre, and begin live-streaming on-board video, minimizing response times and maximizing safety. A communications interface with the driver will provide the ability to send traffic advice and new instructions from an informed management centre, along with details of any approaching incident.

Passenger WiFi

Offering WiFi on buses and public transportation will improve the customer experience which increases passenger numbers and the likelihood of returning passengers. This service could be offered free to passengers at no extra cost to the operator through the use of advertising or sales of user contact data. The router equipment is simple to install and uses the 4G LTE network as backhaul. With many buses in the fleet, favourable pricing plans for data connectivity may be established.

On-Board Digital Signage

Outputting to one or several rugged LED Displays, the Smart Bus on-board computer can display commercial advertising images or videos to passengers as an additional revenue stream. If used with the GPS module this could be software-linked to the vehicle location to display advertising related to local businesses or facilities the bus is currently passing by.

Bus announcements

Automatic announcements can be made from the bus computer. This can take the form of programmed arrival announcements when the bus approaches scheduled bus stops, periodic safety or security announcements such as a reminder to passengers to take all belongings with them when disembarking, and also alerts to pedestrians and cyclists warning when the bus is pulling off or turning.

Specifications

On-Board Computer

Dimensions (W x H x D)	223 x 46.6 x 133 mm (8.69" x 1.81" x 5.18")
Weight	1.7 kg
Environmental	Operating Temperature -20 ~ 55° C with 0.7m/s air flow (extended)
	Operating Temperature 0 ~ 40° C with 0.7m/s air flow (standard)
	Relative Humidity 95% @ 40° C (non-condensing)
	Vibration 3 Grms, IEC 60068-2-64, random, 5 ~ 500 Hz, 1 hr/axis
	Shock 30G, IEC 60068-2-27, half sine, 11 ms duration
Processor	Intel i5-4300U Dual Core 1.9 Ghz, Intel GT2-4400 Graphics
Memory	8GB DDR3L 1600 MHz
Display	Lockable HDMI, VGA, LVDS (optional)
Internal storage	64 GB to 1 TB, mSATA/SATA
Operating System	Microsoft Windows 7 Pro 64-bit
Video Input	MPEG4, H.264, H.265, ONVIF
Video Output	On-device storage, streamed as RTSP
No. video streams	1 to 8 Full HD simultaneously
GPS	GPS/QZSS, GLONASS
ECU Connection	OBDII SAE J1962
Audio	Realtek ALC888S, HD Audio, Line-in, Line out, Mic-in
Ethernet	2 x 10/100/1000 Mbps Intel I218 GbE
I/O Ports	1 x RS-232, 2 x RS-232/422/485, 2 x USB 2.0 & 2 x USB3.0, 8-bit GPIO
Compliance	EMC: CE/FCC Class A, CCC, BSMI
	Safety: UL, CCC, BSMI, CB

Power System

Dimensions (W x L x H)	230 x 48 x 140 mm + batteries
Input Voltage	10-36V dc
Battery backup capacity	6 - 50 Ah
Environmental	Operating Temperature -20 ~ 55° C with 0.7m/s air flow
Cooling	Thermal shutdown with internal and external thermostat
	Temperature-controlled fan outputs

Connectivity

Ethernet	4 to 8 port, auto-uplink, 10/100Mbps, 5-30V dc
	Operating Temperature -40 ~ 80° C (extended)
Cellular	2G 3G 4G LTE modem, Mini PCIe
Satellite	Inmarsat BGAN/Thuraya-IP via USB or Ethernet
WiFi	Backhaul in transit via Access Point, upload over fixed infrastructure