NUUO NVRsolo Specification

NUUO NVRsolo
System Diagram
Main Features
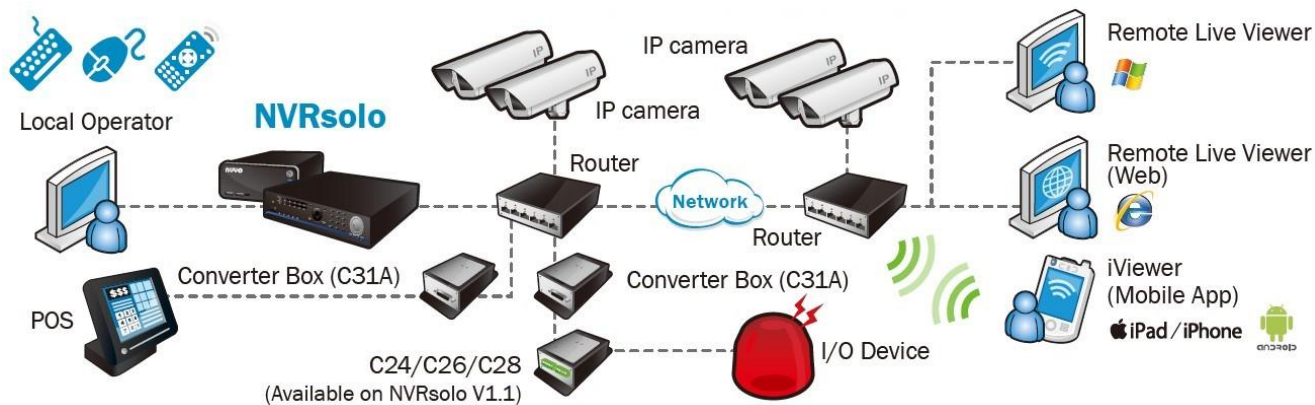
- Linux embedded – safer solution against PC crashes and virus attacks
- **One-click setup for more than 100 brands of IP cameras**
- **ezNUUO – free from router settings for web/ mobile viewing**
- **Point of Sale (POS)[1]**
- **Alarm source of NUUO Central Management System**
- RAID 0,1,5,10 support[2]
- **Support embedded motion detection (local setup)**
- **Support camera multi-stream setting[3]**
- **Dual monitor[25]**

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[1] POS device configuration is only available in web.
[2] NS-1040/NS-1080/NS-2040/NS-2080/NS-2016 support RAID 0, 1. NS-8065/NS8165 supports RAID 0,1,5 and 10.
[3] DP 3.1 or above. Please check the supported camera spec list on website.

- **2nd stream record – Dual record**[26]
- Support megapixel cameras and H.264, H.265 compression format
- **H.265 support**[24]
- **Support camera two-way audio**[4]
- IP Camera support image preview and camera motion are available on local UI (only on supported camera)[27]
- IP Camera reboot, reset and firmware upgrade could be done through local UI (only on supported camera)[27]
- UPnP support for mass upgrade SNVRs/IP Camera firmware by **IPInstaller** (only on supported camera)[27]
- Support camera snapshot[5]
- Remote I/O solution and camera I/O integration
- Real-time digital output, Email alert and push notification on mobile
- Digital watermark
- NTP server synchronization
- Compatible with touch panel[6]
- **Support HDD SMART self-test**
- Support 100 brands of IP cameras and 2329 models (with free monthly update)
- QR code

Remote Client Application
- **Support Multi-Stream for remote live view bandwidth control (Original / 500 kbps[7] / 100 kbps)**
- Support mobile client for iPhone / iPad / Android[8]
- Up to 128 CH remote live view with multiple monitors

Web
- Web-based configuration, live viewer, playback (Recommend on IE 8, 9, 10, 11, Mac Safari and Windows Chrome)
- Online GUI recording schedule
- Panorama 360° PTZ (ImmerVision and VIVOTEK fisheye)
- Generic dewarp (fisheye)
- Digital PTZ and multi-view
- Support joystick for easier camera control
- Playback with 5 types of intelligent event search
- E-map with indicator
- Auto port-forwarding
- Playback speed through **remote client** can support up to **64X**.

Specifications									
Model	**NS-1040**	**NS-1080**	**NS-2040**	**NS-2080**	**NS-2160**	**NS-8060**	**NS-8160**	**NS-8065**	**NS-8165**
Maximum Numbers of Licenses	8[9]		16[10]			16[11]			
Based License	4	8	4	8	16	6	16	6	16
Video Output	HDMI, VGA								
Output Resolution	1920x1080, 1280x1024, 1280x720, 1024x768								
Decoding Capacity (H.264)	120fps @1080p or 240fps @720p (no resolution limitation on single channel)[12]								
Decoding	120fps @1080p or 240fps @720p								

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[4] DP 3.1 or above. Please check the supported camera spec list on website.

[5] DP 3.2 or above. Please check the supported camera spec list on website.

[6] Acer T232HL and ViewSonic TD2220

[7] DP 2.16 or above; the low profile of cameras integrated before 2.16 is 300kbps.

[8] Please check the supported camera spec list on website. Besides, to use this feature, you have to enable 2nd stream function on setting page first.

[9] NS-1040 can support up to 8 cameras with license activation (license type: 1/2/4ch)

[10] NS-2040/NS-2080/NS-2016 can support up to 16 cameras with license activation (license type: 1/2/4/6/8/10ch)

[11] NS-8060/NS-8065 can support up to 16 cameras with license activation (license type: 1/2/4/6/8/10ch)

[12] The total capacity is around: max 8ch 5M cameras and others are 2M cameras; max 6ch 8M cameras and others are 2M cameras

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Capacity (MPEG4)	(Up to 1920x1080[13] per channel)				
Decoding Capacity (MJPEG)	15fps @720p (Up to 2560x1600[14] per channel)				
Specifications					
Throughput	60Mbps	80Mbps			
Number of Drives	1 x 3.5" SATA II / 2 x 2.5" SATA II	2 x 3.5" SATA II		8 x 3.5" SATA II	
External Storage	1 x eSATA				
Max Storage Per Drive	6TB[28]				
RAID Level	RAID 0,1		Single	RAID0,1,5,10	
RAM	DDR3 2GB				
I/O Interface	5 x USB 2.0 (for keyboard, mouse, UPS, USB flash drive)		4 x USB 2.0 (for keyboard, mouse, UPS, USB flash drive)		
On-Box I/O	0/0		16/4		
LAN	2 x Gigabit Port, RJ45				
LAN Transmission Speed	10/100/1000 Mbps				
Voltage	DC 12V 4A	DC 12V 5A	AC 100V~240V, 3.5A~1.5A, 60-50Hz		
Power Consumption	Full loading: 20W Max: 48W	Full loading: 25W Max: 60W	Full loading: 80W Max: 250W		
Device Dimension (HxWxD)	70.5 x 215 x 220 mm	70.5 x 215 x 260 mm	88.5 x 438 x 442 mm		
Device Weight (Without Drive)	2.5 kg (5.51lbs)	2.23kg(4.91lbs)	9 kg (19.84lbs)		
Temperature (Operating with HDD)	0°C-40°C				
Humidity (Operating)	5%-95%				
Supported IP Camera Brands	ACTi	ADT	Airlive	Alarm.com	Alphatech
	American Dynamics	AMTK	Arecont	ARM	ATV
	Asoni	AXIS	Aver	BASLER	Bolide
	BOSCH	Brickcom	Bullwark	Centrix	CISCO
	CNB	COP	CORUM	Dahua	Digital watchdog
	D-Link	DlinkCN	DYNACOLOR	Eneo	Ernitec
	Etrovision	Everfocus	FINE	Forenix	GE
	Grandstream	Grundig	Guardeon	Guardliner	HIKVISION
	Histream	Honeywell	i-Mege	InscapeData	IQinVision
	Jetstor	JVC	LevelOne	LG	Lilin
	Linksys	Lumenera	MegaIP	Messoa	MOBOTIX
	Milesight	NetworkCamera	NTIC	On Electronics	Onvif
	Panasonic	Pelco	PiXORD	PLANET	Probe
	Rover	Saerim	Samsung[23]	SANTEC	SANYO
	Shany	Sony	StarDot	Sunell	Techson
	Telview	Tiandy	TOSHIBA	TRUEN	UDP

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[13] The width/length of 2 megapixels is limited to 1920x1080. The local display won't work if either one side is over the limit.

[14] The width/length of 4 megapixels is limited to 2560x1600. The local display won't work if either one side is over the limit.

	Videosec	Vision Hi-Tech	Vista	Vitek	VIVOTEK
	Wavekrom	Yudor	Zavio	3S vision	3M
Compression Format[15]	MPEG-4, M-JPEG, H.264, **H.265 and MxPEG** (**Remote client only**)				
Recording Type	Emergency record, continuous record, record by schedule, event triggered record, digital input triggered record, **2nd stream record-dual record**(**Always record only**)				
Live View Control	Live view, preset/go, PTZ, remote I/O, snapshot, digital PTZ				
Remote Live View Control	Live view, preset/go, PTZ, remote I/O, snapshot, multi-view, digital PTZ, advanced E-Map, bandwidth monitoring				
Audio & Video Recording	Synchronized audio and video recording				
POS[16]	Live view, record, playback, and search for every transaction (Web only)				
Auto Backup	Automatically backup the recorded video of the date before to FTP server				
Intelligent Search via Web/Remote	General motion, missing object, foreign object, lose focus, camera occlusion				
Remote Live View Connection	Live view maximum 64 connections per server at the same time[17]				
Supported 21 Languages:	English, Croatian, Czech, Deutsch, Finnish, French, Hebrew, Italian, Japanese, Korean, Polish, Portuguese, Portuguese (Brazil), Russian, Simplified Chinese, Traditional Chinese, Spanish, Swedish, Thai, Turkish and Hungarian				

Remote Client System Minimum Requirement									
Model	**NS-1040**	**NS-1080**	**NS-2040**	**NS-2080**	**NS-2160**	**NS-8060**	**NS-8160**	**NS-8065**	**NS-8165**
OS	Windows XP (32-bit) / Win7 (32 and 64-bit) / Win8 (32 and 64-bit) / Win8.1 (32 and 64-bit)								
CPU	Intel Core 2 Duo, 2.6GHz								
RAM	1GB								
LAN Transmission Speed	10/100/1000 Mbps (RJ45)								
UI	1. Web browser: Internet Explorer 8, 9, 10, 11 2. NUUO client application program 3. NUUO iPhone, iPad, Android mobile live viewer[18]								

Technical Details

• **System, Setting, Management and Integration**

- **Server-Client Architecture:** Centralizes all video data transaction only via NVRsolo to local operators and remote clients. With this centralized structure, total camera loading remains at a stable level, thus ensuring good recording quality even when reaching maximum number of remote client access.

- **Open Platform:** Support 2329 IP camera models and video servers (encoders) from 90 brands of major network camera manufacturers.

- **One-Click Setup:** NVRsolo can automatically search and add IP cameras on the same subnet (camera should support UPnP protocol or should be implemented its brand's search tool[19]). For those unsearchable cameras, user can manually insert it. The auto detection function will help the user to find the brand and model of the

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[15] Depend on IP cameras.
[16] POS device configuration and search function are available in web only.
[17] Please refer to performance report for more details.
[18] Please check the supported camera spec list on website. Besides, to use this feature, you have to enable multi-stream function on setting page first.
[19] Support camera search tools of ACTi, Arecont, and Sony.

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camera after specifying its IP address.

- **Storage Optimization:** NVRsolo supports H.264, H.265 compression format which helps increasing the storage efficiency to nearly 600% higher than MJPEG and 150% higher than MPEG4.

- **Friendly GUI Recording Scheduler:** Graphical user interface to setup recording schedule featuring unique day mode and week mode.

- **Embedded motion detection:** Cameras without motion detection can be used to trigger related event.

- **Event & Action:** 4 camera events including motion detection (from server or from camera), connection lost and camera input; 1 input event from remote I/O box; 5 system events and daily system report by E-mail; 5 instant alarm responses supporting output, Email, E-map popup on web/remote, push notification on mobile and NUUO CMS alarm system.

- **RAID Level Selection:** NS-1040/NS-1080/ NS-2040/NS-2080/NS-2160 supports RAID 0 and 1 for maximum capacity or data protection at the HDD level. For NS-1040/NS-1080, to use RAID 1, you must insert two 2.5 inch HDDs. NS-8065 and NS-8165 support RAID 0, 1, 5, 10.

- **Point of Sale (POS):** POS transactions received through NUUO POS box or Ethernet (TPC/IP client). POS text overlay on live view video and recordings. All recorded POS transactions are searchable on web/remote playback system.

- **I/O Event Control**: With the integration of camera I/O and NUUO I/O Box, system can start recording when input triggered, or trigger output as an event happened.

- **Various Authorities of Different Kinds of Users:** Web Viewer logins to NVRsolo via 4 different user groups: administrator, power user, user, and guest. Each user group has its own distinctive privilege in system configuration, live view camera and playback records.

- **Synchronization with NTP Server:** Synchronize time weekly/monthly to keep the accuracy of recording time.

- **Log System:** Hardware log keeps track of system operation; NVR log for camera status and user access; NVR event Log for special events; Export and Backup Log for exporting video or video backup action.

- **User Friendly:** Provide users with hints on local interface and HELP tab on the webpage for quick start tips and troubleshooting.

- **Auto Power-on:** The system shall be able to power-on automatically and keep recording after incident power outage.

Local Operation

- **Multiple Live View Channel:** Up to 8 channels on NS-1040/NS-1080 and up to 16 channels on NS-2040/NS-2080/NS-2016 and NS-8060. The display limitations are described on page 2.

- **Multiple Playback Channel:** Up to 8 channels on NS-1040/NS-1080 and up to 16 channels on NS-2040/NS-2080/NS-2016 and NS-8060/NS-8160.

- **Monitor Resolution:** 1024x768, 1280x720, 1280x1024, 1920x1080.

- **Emergency Recording:** Click the Emergency Recording button on Live View to active all channels always recording instantly.

- **Instant Playback:** Play the last few minutes of live videos instantly to investigate recent events.

Remote Client Operation

- **Multiple Live View Channel:** Up to 64 channels of remote connections per unit. Under full loading configuration, 16-channel connections are recommended.[20] Remote Live Viewer client supports 64 channels from multiple servers, and could display up to 128 channels with multiple monitors. In addition, Remote Live Viewer client can access and display live video from any NUUO Mainconsole family servers simultaneously.

- **Multiple Playback Channel:** In web playback client/NUUO Playback System, up to 8 channels on NS-1040/NS-1080 and up to 16 channels on NS-8060/NS-8065.

- **Monitor Resolution:** 800x600, 1024x768, 1200x900, 1280x1024, 1366x768, 1440x900, 1600x1200, 1680x1050, 1920x1080, 1920x1200.

- **Multi-View:** NVRsolo can duplicate the same live view video onto multiple channels and digitally zoom in to see the details of different spots on cloned channels without losing the original live view video or using extra camera licenses.

- **E-Map:** Show device indicator on map for easy finding and tracking device location. Furthermore, pop up map to point out the device when an event occurred.

- **Stream Profile:** Live display multiple camera streams with lower bit rate, while still recording at highest possible quality.

- **Multiple Mobile Clients:** Support mobile live viewer for iPhone, iPad, and Android.[21]

· Playback, Search, Export and Secure Data

- **Post-Recording Processing (remote):** Intelligent search, digital PTZ and video enhancement tool.

- **Intelligent Search (remote):** Search recorded video for 5 events including general motion, foreign object, missing object, loss focus and camera occlusion.

- **Video Enhancement (remote):** Fine tune the image's visibility, sharpen, brightness, contrast or even grey scale.

- **Evidence Export:** Snapshot and print video image in BMP/ JPEG; backup video in DAT; save video in ASF/AVI. The action exporting video or video backup will be recorded in NVRsolo's log system.

- **Alarm Notification:** Notify users on camera and system event by sound, digital output, push notification, E-mail and NUUO CMS alert.

- **Auto Backup:** Automatically backup the recorded video of previous dates to a designated FTP server.

- **Manual Backup:** Manually backup or delete the recordings from any NVRsolo.

- **Watermark:** Protect original recordings from alternation with NUUO watermark verification tool.

· Extended Service

- **NUUO Central Management System (CMS):** Ultimate central monitoring solution for grand scale projects and projects with multiple sites. Fully compatible with all NUUO Mainconsole family servers.

· External Device

- **POS Box (from serial port to Ethernet):** NUUO Point of Sales system works on NVRsolo by overlaying the transaction text from cash register or ATM machines onto live video and recordings. All recorded POS

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[20] Please refer to performance report for more details.

[21] Please check the supported camera spec list on website. Besides, to use this feature, you have to enable 2nd stream function on web setting page first.

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transactions are searchable on web/remote playback system.

- ■ **Remote I/O Box:** I/O signals of NUUO I/O Box are converted to Ethernet through converter, which enables NVRsolo to do more sophisticated application, such as starting recording when input triggered, triggering output as an event happened, and much more.

- ■ **Panorama 360° PTZ:** Several modes are supported on web/remote live view and playback system. Generic dewarp: Original mode, Rectilinear mode, Quad mode and Dual-view panorama mode. ImmerVision[22]: Original mode, PTZ mode, Quad mode and Perimeter mode. Vivotek: Original mode, Rectilinear mode, Full-view panorama mode, and Dual-view panorama mode.

- ■ **APC UPS:** Continues to feed the NVRsolo power in an event of power outage.

- ■ **Joystick:** Joystick support on PTZ cameras and software enabled digital PTZ function are both available in web/remote live view. Preset points and patrol functions are also available on many camera models.

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[22] Please refer to ImmerVision's website for qualified cameras.
[23] SAMSUNG Camera SNO-L6083R 1st stream does not support H.264, so NVRsolo will take 2nd stream as main stream. Thus 1st stream on UI will connect to camera 2nd stream, and vice versa.
[24] H.265 support on remote only with supported cameras
[25] Local server supports dual monitors.
[26] When Dual record operates; RAID 1 total throughput with 56Mbps; RAID 0 total throughput with 72Mbps; RAID 5 Total throughput with 20Mbps.
[27] These functions are only available on NUUO, Zavio camera.
[28] Maximum total volume can only up to 16TB in RAID 5.

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