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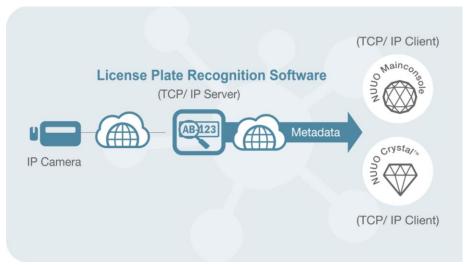
### I. License Plate Recognition Solution

Furthering its dedication to be a top Video Surveillance solution provider, NUUO is pleased to announce its new strategic partnership with Hikvision, a globally recognized supplier of video surveillance products and solutions.

NUUO and Hikvision are now working together to provide the most cutting edge ANPR solutions for under both NUUO Crystal<sup>TM</sup> and NUUO Mainconsole (NVR IP+, Hybrid NDVR, and DVR card) platforms. The suite ensures that our clients always have access to the most advanced LPR solution in the market.

#### A. System Architecture

Hikvision ANPR Camera automatically captures the license plate in real time and sends the metadata to NUUO metadata server, with this information, the user can create a pre-defined Blacklists and Whitelists list and take appropriate actions such as opening a gate or generating an alert.



#### **B.** Compatible Versions

Product	Server Version	<b>Client Version</b>	Plugin Version
Crystal <sup>™</sup>	v.3.8.0	v.3.8.0	v.2.3.0.2
Mainconsole	All	All	v.2.3.0.2

### **II. Hikvision ANPR Camera Firmware**

According to Hikvision, they have individual R&D team in each region for developing the customized camera firmware. The official dedicated firmware information of Hikvision ANPR Camera is from region to region and need to be confirmed by the local branch. For any camera related issues, please contact <a href="mailto:support@hikvision.com">support@hikvision.com</a> for further technical support.

### **III. NUUO Server Configuration**

- A. Crystal<sup>TM</sup>
  - **a.** To use this feature, please upgrade your Crytal<sup>™</sup> Server to v.3.8.0 or higher version. The plugin for Hikvision ANPR cameras has been included as default which can be found in

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the "Plugin Overview" tab.

~ 📀	ೆಡಿ	Live View	Playback	Config System Overview	👗 admin 🤌 🚽 🗙
	B NVR Management Server	Proper	ties Hardware Se	tting Plugin Overview Source Overview Event Action	
X	NVR Recording Server	8	Name	Version	
1.2	A NVR Recording Server		VAULT_Falco	2.3.0.0	
?	A NVR Recording Server		SCB-C31	2.3.0.0	
	■ L NVR Recording Server		POS TCP Client	2.3.0.0	
	a & LPR Demo		LPR VIT	2.3.0.0	
	Metadata Server		LPR Hikvision	2.3.0.2	
	- R NVR Metadata Server		POS TCP Server	2.3.0.0	
	NVR Metadata Server		LPR NeuralLabs	2.3.0.0	

**b.** Open the web page of Hikvision ANPR camera and enable the road traffic function.

	Live View Playb	ack Picture	Configuration	n	👤 admin	🚯 Help	E+ Logout
Local	Detection Configuration	Picture Camera Bla	klist & Whitelist	Real-time LPR Result			
System	Detection Type	Vehicle Detection	•				
Network	Enable						
Video/Audio	Area Settings Armi	ing Schedule and Linkage Meth	bd				
🔝 Image							
Event							
Storage							
Road Traffic							
	Please click here to the brow	o download and install the p ser when installing the p	ie plug-in, Clos lug-in,	e			
	Total Number of Lanes	2	٠				
	Plate Mode	Small	•				
	Select Mode	City Street	•				
	🗎 Save						

If web page of Hikvision ANPR is the kind below, you need newer plugin version that higher than 2.3.0.4. You can change and check the setting on this page.

Live View Pictur	e Log	Configuration	Setup Wizard	💄 admin 🖬
Device Status Local Configuration Device Configuration System Maintenance System Configuration Encoding and Storage Text Overlay Application Mode Capture Parameters Image Parameters Entrances and Exits			TPS Time Service DST	
User Management	IPv6 Default Gateway IPv6 Subnet Mask MAC Address MTU Multicast Address	54 c4 15.16:83 x8 1500 224.1.2.3		
	ANPR IP:	0.0.0.0		
	ANPR Port	4567		
	Alarm Host Address:	0.0.0.0		
	Alarm Host Port	7200		

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c. Add a metadata source of Hikvision ANPR camera and input the necessary information to Crystal<sup>™</sup>. (Please notice that each Hikvision ANPR camera can only be connected by one metadata server at a time and each metadata source can only have one metadata channel)

~	of ta	Live View Playback Config System Overview	🚨 admin ? 🔔 🗗 🗙
		Properties Hardware Setting Plugin Overview Source Overview Event Action	
	■ & NVR RS1	Name Version	
[×	A NVR Recording Server	VAULT_Falco 2.3.0.0 POS TCP Client 2.3.0.0	
?=	Recording Failwer Server     S. Metadata Server     S. Metadata Server     S. NVR Metadata Server	SCB-C31 2.3.0.0	
	B R NVR Metadata Server     metadata source	NuFace 2005 LPR NeuralLabs 2300	
		LPR VIT 2.3.0.0	
	□ J∎ metadata source (03) J∎ metadata channel	POS TCP Server 23.0.0 UPR Hikvision 23.0.2	
	– – – – – – – – – – – – – – – – – – –		
	- Ø matrix ⊟ 🛱 IVS Server		
	- Sorver		
	Add NuFace Add LPR NeuralLabs		
	Add VAULT_FALCO Add LPR VIT		
	Add POS TCP Client		
	Add POS TCP Server Add SCB-C31		
	Add LPR Hilwision → 21 ⊞ → 22 □ P □ →	+ -	
Date: 20	117/11/06   Time: 17:02:50   Server Address: 10.0.4.229-5250   CPU Los	ing:5%   Memory Usage: Total 8075MB Free 2483MB   Network: Displayed Streaming Bit Rate 0.00 kbps	
	<ul> <li>of 5</li> </ul>	Live View Playback Config System Overview	👗 admin 🣍 – 🗗 🗙
-	■ lo NVR Management Server	Properties Channel Overview Event Action	
X	NVR Recording Server     & NVR Recording Server	Metadata Source: 💌 Enable Plugin type: LPR Hikvision	
?	■ NVR Recording Server ■	Source type: LPR Hikvision	
	a ≼ LPR Demo	Name: metadata source (02)	
	Recording Failover Server     Metadata Server	Description:	
	R NVR Metadata Server		
	NVR Metadata Server     NVR Metadata Server	Connection test: Ø	
	💷 ﻪ metadata source	Enable LPR : 🗷 Enable	
	metadata source (02) NVR Metadata Server	Metadata Server IP : 10.0.4.229	
	⊢	Metadata Server Port : 7000	
	■ IVS Server	Camera IP : 10.0.10.83	
	- ≜ IVS Server - ⊛ IVS Server	Camera Http Port : 80	
		Camera Account : admin	
		Camera Password : ••••••	
		LPR Blacklist :	
		LPR Whitelist :	
	+-쇠탈등 25		
		229:5250   CPU Loading:1%   Memory Usage: Total 8075MB Free 2411MB   N	

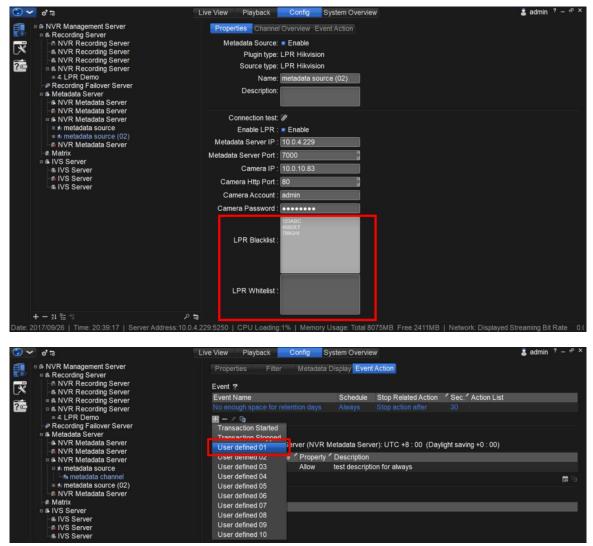
Note: As the above snapshot

• Enable LPR: Checkbox "Enable LPR" can disable the ANPR function of the camera by ticking it. It designed to show in the NuClient because Hikvision ANPR cameras can't configure this function in their earlier web page. Thus, once you have connected CAM 1 as a metadata source and didn't untick this checkbox and commit, the system will still receive the metadata from CAM 1 even if you've

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modified the configuration to CAM 2. If you have seen ghost detection results appearing in the Live View, they may be from the old Hikvision ANPR camera once added as a metadata source.

- Metadata Server Port: Please make sure you assign an available "Server Port" for receiving the metadata from Hikvision ANPR Camera. Using occupied port may lead to receive unnecessary metadata from other metadata source.
- d. For Blacklist and Whitelist applications, input the relevant license plate numbers into the blacklist and whitelist column in the "Properties" tab. All the metadata channels under the metadata source will share the same blacklist and whitelist for flexible system design. Then, setup a specific action for blacklist or whitelist by User Defined Event in metadata channel > Event Action and modify the text of the event condition to "listType=blacklist" or "listType=whitelist" (Please use the correct case for each letter. The comparison is case-sensitive.). Once set-up is complete, the Crystal Server will automatically compare the receiving license plate numbers with those in the list and do instant responses. (The character limit of each list is up to 250,000 characters)



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~ 📀	e, :9	Live View Playback Config	System Overvie	ew		👗 admin 🧵 – 🗗 🗙
	6 NVR Management Server	Properties Filter Metadat	a Display Even	t Action		
×	& Recording Server     NVR Recording Server     & NVR Recording Server	Event ?				i
	A NVR Recording Server	Event Name	Schedule	Stop Related Action	Sec. Action List	
?	◎ ♣ NVR Recording Server ■ & LPR Demo	No enough space for retention days User defined 01	Always Always	Stop action after Stop action after	30 30	
	Recording Failover Server	+ - / 🖻				
	6 Metadata Server     6 NVR Metadata Server     NVR Metadata Server     NVR Metadata Server	User defined configuration setting Event name: User defined 01	_			
	B NVR Metadata Server     metadata source					I
	hetadata source	Event condition	_			I
	∍ 🌆 metadata source (02)	<ul> <li>Text: listType=blacklist</li> </ul>				I
	–					I
	■ IVS Server	∃ Match case				I
	⊢ <b>≞</b> IVS Server	Advance setting				I
	-⊪ IVS Server -⊪ IVS Server	Wildcard				I
	-10103 361761	Regular expression				I
		<ul> <li>Number</li> </ul>				I
		Prefix text:				I
		Condition: = 0	and 0			
		Postfix text:				
		Frequency				
		Count >= 1				
		Count period:				
		Keyword happens within 1	transaction(s			
+		ନ 🗧 🔹 Keyword happens within 0	day 0 ho	our 10 🚆 min		
Date: 20	17/09/26   Time: 21:02:38   Server Addres	ss:10.0.4.229:5250   CPU Loading:3%   Memory	y Usage: Total 8	075MB Free 2334MB	Network: Displayed	Streaming Bit Rate 0.

Note:

- Please make sure you upgrade the client version to 3.8.0 or over 3.8.0.
- For blacklist and whitelist, please use the correct case for each letter (The comparison is case-sensitive) and spilt them by new line.
- Please make sure you setup both start and end in the filter for the system to define a complete detection result

#### B. Mainconsole

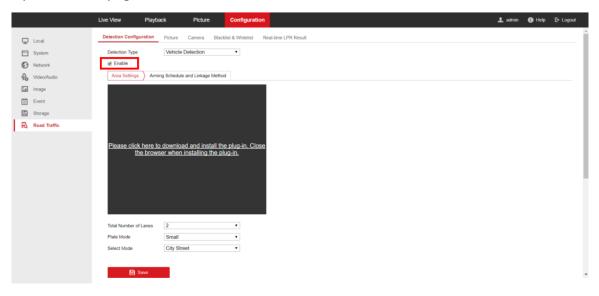
- **a.** To use this feature, please <u>download</u> and put the .dll plugin file for Hikvision ANPR camera into the corresponding installation directory. Then, it show in the "Plug-in" tab.
  - For 32bit Mainconsole, please download the 32bit .dll plugin file and put it into the C:\Program Files (x86)\NUUO\SCB\_IP\PluginPack\MetadataModelLPRHikvision
  - For 64bit Mainconsole, please download the 64bit .dll plugin file and put it into the C:\Program Files (x86)\NUUO\SCB\_IP\x64\PluginPack\MetadataModelLPRHikvision

ata Source   Display	r iog-iii							
Brand	Model	Туре	Version	^	-			
AC TCP Client		AC	2.2.0.0					
LPR Hikvision		LPR	2.3.0.2					
LPR NeuralLabs		LPR	2.3.0.0	_				
LPR TCP Client		LPR	2.2.0.0					
NuFace		Nu-connection	2.0.0.7					
Visec		LPR	1.0.8					
Tyco Client		AC	1.0.8					
UDP		IVS	1.0.8					
Soyal		AC	1.0.8					
Soyal Client		AC	1.0.8					
VAULT_FALCO		AC	1.0.8	~				

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**b.** Open the web page of Hikvision ANPR camera and enable the road traffic function.



If web page of Hikvision ANPR is the kind below, you need newer plugin version higher than 2.3.0.4. You can change and check the setting on this page or MainConsole also.

Device Status     Local Configuration	Device Information Serial Port				
Device Configuration	NIC Settings NIC Type	10M/100M/1000M Self-ad	PS Time Servis	DST	
System Maintenance     System Configuration     Encoding and Storage	DHCP	192.168.1.64			
Text Overlay     Application Mode	IPv4 Subnet Mask	255.255.255.0			
Capture Parameters Image Parameters	IPv6 Mode	Auto-Obtain	~		
Entrances and Exits     User Management	IPv6 Address IPv6 Default Gateway IPv6 Subnet Mask				
	MAC Address	54 c4 15 16 83 e8			
	Multicast Address	224.1.2.3			
	ANPR IP: ANPR Port	0.0.0.0  4567			
	Alarm Host Address:	0.0.0.0			
	Alarm Host Port	7290			

c. Add metadata source of Hikvision ANPR camera, input the necessary information. (Please notice that each Hikvision ANPR camera can only be connected by one metadata server at a time and each metadata source can only have one metadata channel) **3**<sup><sup>rd</sup></sup> Party Integration User Guide

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Settings   Metadata Type:   LPR   Source Type:   LPR Hikvision   Test Connection     Export   Server IP   Server Port   7000   Cam IP   10.0.10.25   Server Port   7000   Cam Http Port   80   Cam Account   admin   Cam Account   admin   Cam Password   Whitelist File   blacklist File   blacklist File	🖥 Insert  📩 Delete 👔	Metadata Source Setting		?	×		
Metadata Type: LPR  Source Type: LPR Hikvision  Test Connection  Export  Free Enable LPR Server IP 10.0.10.25 Server Port 7000 Cam IP 10.0.10.83 Cam Http Port 80 Cam Account admin Cam Password ******* Blacklist File blacklist.txt	🗟 Metadata	Settings					
Source Type: LPR Hikvision ▼ Test Connection  Export  Export  Export  Export  Export  Cam PP  10.0.10.25  Server Port  Cam Port  80  Cam Account  admin  Cam Password  *******  Blackist File  blackist.txt		Name:	Hivision				
Image: Strength of the second of		Metadata Type:	LPR 🔻				
Image: Finable LPR         Server IP       10.0.10.25         Server Port       7000         Cam IP       10.0.10.83         Cam Http Port       80         Cam Account       admin         Cam Password       *******         Blacklist File       blacklist.txt		Source Type:		Test Connection			
Image: File       IO.0.10.25         Server IP       IO.0.10.25         Server Port       7000         Cam IP       IO.0.10.83         Cam Http Port       80         Cam Account       admin         Cam Password       *******         Blackist File       blackist.txt				lest connection	-		
Image: File       IO.0.10.25         Server IP       IO.0.10.25         Server Port       7000         Cam IP       IO.0.10.83         Cam Http Port       80         Cam Account       admin         Cam Password       *******         Blackist File       blackist.txt							
Image: File       IO.0.10.25         Server IP       IO.0.10.25         Server Port       7000         Cam IP       IO.0.10.83         Cam Http Port       80         Cam Account       admin         Cam Password       *******         Blackist File       blackist.txt						Export	ï
Server Port 7000 Cam IP 10.0.10.83 Cam Http Port 80 Cam Account admin Cam Password ****** Blackist File blackist.txt		Enable LPR					1
Cam IP 10.0.10.83 Cam Http Port 80 Cam Account admin Cam Password ******* Blackist File blackist.txt		Server IP	10.0.10.25				
Cam Http Port 80 Cam Account admin Cam Password ******* Blackist File blackist.txt		Server Port	7000				
Cam Account     admin       Cam Password     ********       Blackist File     blackist.txt		Cam IP	10.0.10.83				
Cam Password ****** Blacklist File blacklist.txt		Com Utto Dort	80				
Blackist File blackist.txt		Can hup Port					
			admin				
Whitelist File whitelist.txt		Cam Account					
		Cam Account Cam Password	****				
		Cam Account Cam Password Blacklist File	****** blacklist.txt	1			

Note: As the above snapshot

- Enable LPR: The "Enable LPR" checkbox can disable the ANPR function of the camera by ticking it. It designed to show in the NuClient is because Hikvision ANPR cameras can't configure this function in their earlier web page. Thus, once you have connected CAM 1 as a metadata source and didn't untick this checkbox and commit, the system will still receive the metadata from CAM 1 even if you've modified the configuration to CAM 2. If you have seen ghost detection results appearing in the Live View, they may be from the old Hikvision ANPR camera once added as a metadata source.
- Server Port: Please make sure you assign an available "Server Port" for receiving the metadata from Hikvision ANPR Camera. Using occupied port may lead to receive unnecessary metadata from other metadata source.
- **d.** For Blacklist and Whitelist applications, create and input relevant license plate numbers into a blacklist and whitelist .txt file and put the files into the corresponding plugin installation folder
  - 32bit
     C:\Program Files (x86)\NUUO\SCB\_IP\PluginPack\MetadataModelLPRHikvision
  - 64bit
     C:\Program Files (x86)\NUUO\SCB\_IP\x64\PluginPack\MetadataModelLPRHikvision

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Then, setup a specific action for blacklist or whitelist by User Defined Event in Smart Guard > 3<sup>rd</sup> Party LPR Event > Event Action and modify the text of the event condition to "listType=blacklist" or "listType=whitelist" (Please use the correct case for each letter. The comparison is case-sensitive). Once set-up is complete, the Mainconsole will automatically compare the receiving license plate numbers with those in the list and do instant responses. (The character limit of each list is up to 1,000,000 characters)

a Source Display						
Insert 🖄 Delete	Metadata Source Setting		?	×		
🗟 Metadata	Settings Name: Metadata Type: Source Type: From Enable LPR Server IP Server Port Cam IP Cam Http Port	Hivision	Test Connection		Export	
	Cam Account	admin				
	Cam Password Blackist File Whitelist File	whitelist.txt				
			✓ OK ¥ Car	ncel er D	efine	

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🔥 Event and Action Con	figuration						?	$\times$
Event		Action	@ @ d	Options				
Digita Select E	vent				?	×		
User User User User User User User User	Type saction End action Lost Defined 1 Defined 2 Defined 3 Defined 4 Defined 5 Defined 6 Defined 6 Defined 8 Defined 9 Defined 10	Description A transaction ends Connection Lost User defined event User defined event	rule 2 rule 3 rule 4 rule 5 rule 6 rule 7 rule 8 rule 9 rule 10	ЭК	Can	<ul> <li>×</li> <li>cel</li> </ul>		
Advanced				~	OK		🗶 Can	cel

Alarm Event Configuration	? ×
Basic Advanced	
Metadata Event Rule - User D	Defined 1
Event Name:	User Defined 1
Alert Condition	
Text	
Keyword	listType=blacklist
Match case	
Match whole word	
Using regular expression	on
Numeric value	
Prefix text:	
Condition:	<
Value:	
Postfix text:	
C External rule	
]	
Frequency	
Count: >=	1
Count period:	
<ul> <li>Reset count of each train</li> </ul>	nearting
Reset every	10 mins
	✓ OK X Cancel

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#### Note:

- For blacklist and whitelist, please use the correct case for each letter (The comparison is case-sensitive) and spilt them by new line.
- Please make sure you setup both start and end in the filter for the system to define a complete detection result.

### C. Metadata Display

The plugin will receive the .xml file sending from the Hikvision ANPR camera, and transform the data into a readable format displayed in the interface of NuClient and Mainconsole as pictured below. Users can omit those unwanted data by setting the regular expression in metadata channel > Filter or import the tag filter we've provided in the official website (Crystal/ Mainconsole).

● Crystal<sup>™</sup>



Mainconsole



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