From			Nuremberg
ST-VS/MKP1	Product Management		28.10.2014

Release Letter

Products:	***H.264 Firmware for*** ***CPP4 HD/MP cameras***
Version:	***5.93****.0025*

This letter contains latest information about the above mentioned firmware version.

1 General

This firmware release is a feature release based on FW 5.92.0090.
It is an upgrade to CPP4 (formerly known as IPBE4 platform) based cameras only.

Changes since last release are marked in blue.

Note:
Since FW 5.50 the products support enhanced encryption capabilities to provide compatibility to modern browsers.
Using HTTPS (SSL) automatically encrypts all payload channels (video, audio, metadata, etc.) related to the initiated communication.
No separate AES Encryption license is required for normal use. This might only be considered if the product reaches its performance limits and a few more percent of computational power would help.

Important note:
Since firmware 5.92 no Autoload Decoder can be installed from the camera anymore. This video decoder, used in browsers to view the video stream, had to be taken out of the firmware content due to size limitations, favouring the new features. Instead, a download link to get the more feature-rich MPEG-ActiveX has been inserted, requiring Internet access for immediate installation.

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2 Applicable products:

- AUTODOME 7000 series
- DINION HD 1080p
- DINION HD 1080p HDR
- DINION HD 720p
- DINION imager 9000 HD
- DINION IP 5000 HD
- DINION IP 5000 MP
- DINION IP 4000 HD
- DINION IP starlight 7000 HD
- EXTEGRA IP dynamic 9000
- EXTEGRA IP starlight 9000
- FLEXIDOME corner 9000 MP
- FLEXIDOME HD 1080p
- FLEXIDOME HD 1080p HDR
- FLEXIDOME HD 720p
- Vandal-proof FLEXIDOME HD 1080p
- Vandal-proof FLEXIDOME HD 1080p HDR
- Vandal-proof FLEXIDOME HD 720p
- FLEXIDOME indoor 5000 HD
- FLEXIDOME indoor 5000 MP
- FLEXIDOME IP indoor 4000 HD
- FLEXIDOME IP indoor 4000 IR
- FLEXIDOME IP outdoor 4000 HD
- FLEXIDOME IP outdoor 4000 IR
- FLEXIDOME micro 5000 HD
- FLEXIDOME micro 5000 MP
- FLEXIDOME outdoor 5000 HD
- FLEXIDOME outdoor 5000 MP
- FLEXIDOME micro 2000 HD
- FLEXIDOME micro 2000 IP
- Indoor Minidome 1080p
- Indoor Minidome 5 MP
- IP bullet 4000 HD
- IP bullet 5000 HD
- IP micro 2000
- IP micro 2000 HD
- MIC IP dynamic 7000
- MIC IP starlight 7000
- TINYON IP 2000 family (excluding WLAN)

(* first introduced with this release)

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3 New Features

MIC IP 7000 series

- MIC IP 7000 and VIDEOJET connect 7000 are closely linked together with automated setup using dedicated application variant. This allows the MIC to make use of resources of the VIDEOJET connect 7000 as its own.
- Audio input signal is automatically forwarded from a connected VIDEOJET connect 7000 as the MIC's audio.
- Alarm inputs and outputs on a connected VIDEOJET connect 7000 are virtually belonging to MIC IP 7000 and can be controlled via the MIC user interface.

Fix Cameras

- Analogue video output has been enabled in applicable IP 4000 and 5000 series cameras.

Recording

- Automated Network Replenishment (ANR) 2.0 can now be configured through the Web interface with a single click.
- In ANR mode, SD card fill level is shown on recording status page.

Network

- Auto-IP assignment for IPv4 (aka Link local, APIPA) has been added as an alternative setting to pure DHCP. In this mode, if no DHCP server is responding after 10 seconds, a link-local address will be chosen.

ONVIF conformance

- CONF_ONVIF_STREAM_URI_EX allows storing a stream URI extension that is appended to the ONVIF stream URI.

4 Changes

- An issue with wrong RTSP sequence numbers has been fixed.

5 Restrictions; Known Issues

User Interface

- If UAC is set to default in Windows 7, no snapshot or recording via LIVEPAGE is possible.
- Video and audio may be asynchronous during replay via Web page.
- If a VCA configuration using a rule engine is switched to a VCA configuration without using a rule engine, e.g. MOTION+ or IVA default configuration, the saved configuration is invalid. Forensic search with this configuration may lead to undesired search results.
- In rare cases it may happen that no recordings can be found on PC with Windows XP SP2 and IE6. Internet Explorer may stay in status ‘connecting on replay page’. An update of Internet Explorer is recommended.
- In Firefox, no audio is audible on the Audio Settings page.
- Opera mini for mobile devices cannot work in Intranets because it gets all pages through an opera proxy in the Internet. If there is no Internet connection no content is provided.
- When changing GUI language, the browser cache may have to be deleted and the web browser be reloaded before the language will be selected correctly.
- Google Chrome requires a plug-in for displaying TIFF images to properly show the reference image.
- IE10 by default does not allow snapshots or recording from the LIVEPAGE on local hard disk until one of the following actions is performed:
  - o - uncheck the box "Enable Protected Mode" in internet options/security
  - o - add the device’s IP range to "Local intranet" zone
  - o - add the device’s IP address to the trusted sites
  - o - start IE as administrator
- If an intranet site is opened, IE10 automatically runs in compatibility mode.
  This leads to a misbehaviour that no timeline is shown on the PLAYBACK page.
  Therefore the function "Display intranet sites in Compatibility View" must be disabled.
- Since JVM 1.7.25 a „Certificate Revocation Check“ has been implemented. In networks without access to the Internet (resulting in no access to the revocation services provided by Certificate Authorities) Web browser pages that contain a Java applet will see a significant delay in startup times.
  To avoid such delay, you may choose to disable on line revocation checking through the Java Control Panel (JCP).
  Note that disabling on line revocation checking should only be considered in managed environments as it decreases security protections.
- With HTTPS connection in MS IE and VideoSDK 5.71 installed, swapping between stream 1 and 2 may cause the watermarking icon for stream 2 disappear.
  This may happen only for TCP video streams with infinite I-frame distance and B-frames on.
  A fix will be delivered with VideoSDK 5.71 MR1.

Encoding

- Only H.264 Main Profile using CABAC is supported. CAVLC is not supported.
- JPEG always has HD 1080p format, although stream 1 could be set to SD (480p).
- Frame rates in low light mode might vary and cause bit rate control to produce higher bit rates than set as maximum.
- Aspect ratios 16:9 and 4:3 are not combinable. Aspect ratio from stream 1 will lead.
- With GOP structure set to IBP and IBBP the I-frame distance may not exactly correspond with the set value.
- For stream setting “Dual ROI” the maximum resolution of stream 2 is 288p regardless of a higher resolution selected in the encoder profile.

Network

- QoS values are set according to group Video/Audio/Control for UDP packets, but for TCP packets, only the QoS value for Video is inserted.
- IP addresses 172.20.1.0/30 which include 172.20.1.0 to 172.20.1.3 are reserved for internal communication and must not be used as device addresses. Products without internal communication ignore this restriction and allow the use of this range.

IVA

- IVA and flow need at least 12.5 frames per second video input frame rate. If IVA or Flow are configured, minimum frame rate of 12.5 must be set in ALC mode.
- There is only one configuration for IVA. When analysis type is changed, e.g. from IVA to IVA Flow, the former configuration is lost. Due to this, it is not possible to change the analysis type in a VCA profile switch.
- Due to a limitation of the script language that is used in the background, the delay timer for event-triggered VCA starts immediately when the configuration is set. A trigger event during this period does not restart the timer. Once the timer has elapsed, operation is as desired.
- On devices with VCA FPGA an outgoing IPv6 connection fails when device is initiator, e.g. trying to resolve a time server domain name,
- For 720p cameras, when switched to 1.3MP application mode, IVA does not work. As a result also iAE does not work, as IVA is needed for that. And therefore also User Mode “Intelligent AE” does not work optimally (it is using BLC).

Recording

- LUN size for local recording via “Direct iSCSI” is limited to 2 TB.
- VRM version 2.12 or higher is required.
- In some cases formatting errors on external iSCSI drives may occur, which might need multiple tries to overcome.
- In rare cases it may happen that the owner of an iSCSI LUN is not displayed correctly. Recording is not affected, just previous owner remains displayed.
- If a device had primary and secondary recording running on SD card and is then added to a VRM system, the blocks used for primary recording will not be re-used, reducing the available recording space for the ANR recording. This can be solved by re-formatting the SD card.
- Throughput limit for simultaneous recording and local replay at 100% playback speed is:
  - maximum total recording bit rate of 7 Mbps for external iSCSI recording
  - maximum total recording bit rate of 10 Mbps for SD card recording, depending on SD card performance
- SD card recording performance is highly dependent on the speed (class) and performance of the SD card.
- With I-frame-only recording and audio also enabled for recording, audio will be fragmented or not audible during replay. Please disable audio recording in case of I-frame-only recording.
- Numbering of the recorded files on the replay page is not always contiguous.
  If snippets across block borders belong together, like pre-alarm and alarm recording, the snippets become logically united and only the lower file number is presented in the list.
- SDXC cards are formatted to FAT32 file system and not using the exFAT file system as being mandatory for SDXC standard compliance but fully recognized and accessible.
  The maximum size of 2TB is also supported with FAT32, once SD cards of that size might become available.
  FAT32 also increases portability to other than Windows platforms.
- If a local media is exchanged, existing former recordings are only discovered after rebooting the device.
- Physically removing the local storage media while recording causes the device to reboot. Recording must be stopped before removal.
- Changing audio format while audio is being recorded may cause unknown behaviour of the device and must be avoided.
- 5MP and larger JPEG streaming via RTSP is only possible with decoders supporting the ONVIF extensions.

  JPEG streaming via RTSP is based on RFC 2435. This RFC only allows for a maximum JPEG size of 2048 by 2048.
  With ONVIF, the original, larger JPEG headers can also be transmitted via RTP header extensions. Unfortunately, this only works with decoders using these extensions, i.e. it does not work with a standard VLC.
- After modifying account settings, e.g. FTP server address, to get the changes applied either switching posting off and on or restarting the device is required.

- The storage system indicator status must be ignored during formatting of an SD card.
- Forcing the camera into an overload situation may cause undesired behaviour and in worst cases even recording gaps. It should always be ensured that the CPU load is not consistently around or at its maximum. This can be achieved by adapting encoder settings or avoiding too many tasks, e.g. client sessions, in parallel.

Export

- FTP exported files which include audio in a format other than AAC must be renamed from .mp4 to .m4a to allow correct playback in QuickTime.
- With JPEG Posting active when device is booting, the first posted JPEG image may be a no-cam logo.
- FTP posting with resolution 1080p delivers JPEG with size of 1920x1072 pixels due to 16 pixel macroblock boundary of the JPEG encoder.
- If FTP export files contain only a few frames some players might not correctly replay such a file, or the replay is too quick to recognize something. The exported file is not corrupt though it might seem so.
- Files exported using continuous FTP backup for Rec. 2 where stream 2 is set to I-frames only mode contain wrong timing information and play back too fast.
- FTP export file size is always 100 MB if resolution change occurred in exported time span.
- Getting the file list from Dropbox may fail if there are too many objects (files and folders). Limit is approximately higher than 500 objects but also dependent on file name length etc.

Dome cameras

- Autopan starts outside of defined range if orientation is set to “Inverted”.
- Tilt up limit is treated as lower tilt limit if orientation is set to “Inverted”.
- For VG5, when Fast Address was changed a reboot is required to activate it.
- In AUTODOMEs, blanked sector may trigger a “too dark” alarm.
- On AUTODOMEs, privacy masking does not cover the complete configured area if privacy mask is placed too close to the edge of a scene. Move the target position to the center of the scene before creating a privacy mask.
- If LIVEPAGE is refreshed during recording of Tour A/B on AUTODOMEsthe button “Stop display” will falsely display “Start recording” but still continue tour recording.
- After a firmware upload it may happen that the Privacy Masks and settings from Installer Menu are set to default. Make sure to check if Privacy Masks and Installer Menu settings are still valid after uploading new firmware.
- Some online help files describe a tracking icon which is not visible, documentation obsolete.
- For optimal image performance the user is advised not to turn off contrast enhancement during normal camera operation.
- To improve Recorded (Guard) tour playback accuracy, Bosch recommends users record tours using the User Interface (UI) instead of using a keyboard. In the event that the Recorded (Guard) tour loses position accuracy during playback, users should re-home the camera using the “Find home” button on the Live page.
- Since firmware 5.90 the camera module in AUTODOME 7000 HD receives a different setting that is persistent over a firmware downgrade as older firmware doesn’t know of this parameter to revert it.

  If it is required to downgrade a RCP CGI command needs to be applied before or after the downgrade:
  http://<ipaddress>/rcp.xml?command=0x09a5&type=P_OCTET&direction=WRITE&protocol=TCP&payload=0x800004053003810104245600 00ff&num=1
- MIC 7000 orientation can be switched between normal and canted.
- When the user changes orientation from normal/canted to inverted (or vice versa), MIC 7000 will tilt itself up and over so that the visor and wiper are on top. If there is an attached illuminator this would result in the illuminator hitting the MIC's body. To avoid this, MIC 7000 will not allow an orientation change while the illuminator is attached. A warning message with “Yes/No” selection will be displayed when the user clicks the orientation radio button and the MIC has an illuminator.

Miscellaneous

- The camera date/time will be set to default (Year 2000) after power loss exceeding the buffer period. It is important to ensure that the date/time is correct for recording. An incorrect date/time setting could prevent from correct recording.
- After firmware upload while daylight saving time checkbox is activated the time zone must be adjusted.
- After reboot, the system time re-synchronisation may be delayed up to 9 seconds for SNTP respectively up to 14 seconds for time server protocol.
- A printout was added to telnet when sending an e-mail failed.
  A more detailed printout was added for the three error cases 'could not connect to server', 'authentication failed' and 'recipient not accepted'.
- AAC audio timestamps for UDP live video streams as well as for recording streams are based on 90 kHz instead of 16 kHz to ensure compatibility with VideoSDK.
  AAC audio timestamps for TCP live video streams are based on the standard 16 kHz timestamps. Standard players should connect to live video with AAC audio using TCP.
- After changing the selectable camera mode via alarm input the switch back to a previous mode doesn't work anymore.
- Firmware upload stops recording when it fails or is terminated.
- After downgrade configuration integrity cannot be ensured and settings need to be checked or re-configured.
- When a configuration file is loaded to an incompatible camera, e.g. a configuration file from a HD camera loaded onto a VGA camera, encoder settings might become invalid and need to be re-configured.
- If it shall be checked if the image is not frozen, use milliseconds timestamp to verify.
- iDefog default is OFF under “Low bitrate” scene mode.
- When combining CPU-intensive functions like e.g. encryption, watermarking, or dual recording, with high quality and high frame rate encoder settings, tuning of encoder profile settings might be required to avoid overload situations.

ONVIF conformance

- When using GetPresets command preset names are not set for scene1 to scene6.

Please check the respective release letter of a camera for further device-specific restrictions.

6 System Requirements

- Web Browsers:
  - Microsoft Internet Explorer 9.0 or higher
  - Mozilla Firefox
- Oracle Java Virtual Machine 1.6.0_35
- DirectX 9.0c
- MPEG-ActiveX 5.81 or newer
- Configuration Manager 5.11 or newer

7 Previous Revisions

7.1 New Features with 5.92.0090

Image Processing

- For security surveillance it is important to always provide the best images under all weather conditions. Especially at insufficient lighting condition when having reduced visibility, security camera can bring more than human eyes can see. In line with our focus on making darkness visible, Bosch now also increased visibility in foggy environments or at dawn of the day. Intelligent Defog, also called iDefog, is an implementation of contrast enhancement for foggy scenes. It is applicable to the following cameras:
  - DINION IP 4000 HD (720p)
  - DINION IP BULLET 4000 HD (720p)
  - DINION IP 5000 HD (1080p)
  - DINION IP BULLET 5000 HD (1080p)
  - DINION IP STARLIGHT 7000 HD (720p)
  - DINION IP 7000 HD (1080p)
  - DINION IP DYNAMIC 7000 HD (1080pHDR)
  - FLEXIDOME IP STARLIGHT 7000 RD (720p)
  - FLEXIDOME IP DYNAMIC 7000 RD (1080pHDR)
- Level control algorithm

  New algorithm makes the level control speed faster when changing the light condition. New implementation is able to control the gain, shutter and lens opening in parallel instead of step by step. Applicable to the following products:
  - DINION IP 4000 HD (720p)
  - DINION IP BULLET 4000 HD (720p)
  - DINION IP 5000 HD (1080p)
  - DINION IP BULLET 5000 HD (1080p)
  - DINION IP STARLIGHT 7000 HD (720p)
  - DINION IP 7000 HD (1080p)
  - FLEXIDOME IP DYNAMIC 7000 HD (1080p)
  - FLEXIDOME IP DYNAMIC 7000 RD (1080p)
  - FLEXIDOME IP STARLIGHT 7000 RD (720p)
  - DINION IP STARLIGHT 8000 MP (5MP)
  - DINION IP ULTRA 8000 MP (12MP)

- Resolution 1280x960 with aspect ratio 4:3 is supported for below cameras:
  - DINION IP 4000 HD
  - DINION IP bullet 4000 HD
  - FLEXIDOME IP indoor 400
  - FLEXIDOME IP indoor 4000
  - FLEXIDOME IP outdoor 4000
  - FLEXIDOME IP outdoor 4000
- Scene modes (former user modes) update up to 9 scene modes for below cameras:
  - DINION HD 1080p HDR (1080pHDR)
  - DINION IP 7000 HD (1080p)
  - DINION IP starlight 7000 HD (720p)
  - DINION IP imager 9000 HD (1080p)
  - FLEXIDOME IP dynamic 7000 RD (1080pHDR)
  - FLEXIDOME IP starlight 7000 RD (720p)
  - FLEXIDOME IP 7000 VR
  - FLEXIDOME IP dynamic 7000 VR
  - FLEXIDOME IP starlight 7000 VR
  - FLEXIDOME IP corner 9000 MP

  Scene modes are: Indoor, Outdoor, Traffic, Night Optimized, Intelligent AE, Vibrant, Low Bitrate, Sport & Gaming, Retail

  Other cameras supporting scene modes remain on 6 scene modes, which are: Indoor, Outdoor, Motion, Low light, Intelligent AE, Vibrant

  FLEXIDOME IP micro 2000, TINYON IP 2000 and the older IP 200 series do not support scene modes.

Fix Cameras

- TINYON IP 2000 PIR has a PIR sensor for motion detection, which can be used as a standard input to the alarm rule engine and as a recording trigger.
- New wireless LAN camera TINYON IP 2000 WI supports WPS.
  Activated WPS mode is indicated by 0.5 Hz blinking.

Recording

- Automated Network Replenishment, ANR 2.0, has been enhanced to provide more robustness against SD card failures, including the possibility to add alternative storages.
  Please note:
  Setup of this feature is not possible via the devices' browser-based user interface.
  It can be set up via RCP commands.
  Bosch VMS 5.0 will allow enabling ANR 2.0 via its Configuration Client.
- SD cards are automatically detected, prepared for use, and recording started without configuration required. SD card is added to managed storage media even if not inserted.
- A storage system indicator icon has been added to the Web page's title, providing a quick indication about the health status of SD card recording by green, yellow, or red colour.
- An alarm is created if recording stops, usable in Alarm Task Scripting.

Network

- IPv6 stateless autoconfiguration has been enabled to allow IPv6 routability. The Auto-IPv6 address is displayed in Web browser menu below the manual IPv6 address, but is not configurable.
- ~~Auto-IP assignment for IPv4 (aka Link local, APIPA) has been added as an alternative setting to pure DHCP. In this mode, if no DHCP server is responding after 10 seconds, a link-local address will be chosen.~~
- 802.1x has been enhanced by EAP/TLS using specific certificate. Certificates for client and server side can be uploaded to be used for authentication.
- After a network link is re-established EAPOL communication is initiated to restart 802.1x authentication even if the switch does not initiate this.
- Secure SMTP over Transport Layer Security (TLS/SSL) is supported according to RFC-3207. Connection is established using plain text on port 25; then TLS is negotiated with "StartTLS" command.

ONVIF conformance

- Conformance was tested using recent ONVIF test tool 13.12 SR1.
- A timeout range for continuous move has been added.
- ONVIF GetDigitalInputs is now implemented.

Miscellaneous

- ONVIF can be switched off, advantageous in installations that have native RCP integration to avoid accidental access through ONVIF clients. ONVIF remains enabled by default, of course.
- Platform type (CPP) is now displayed in System Overview page.
- Maintenance page has been reworked to not require Java components any more.

Wireless LAN configuration

- The Wireless LAN camera TINYON IP 2000 W is equipped with a WPS push-button but also allows other ways of configuration.
  These are the ways to configure the wireless LAN interface and run the camera on wireless network:
  - Manually, using Web browser via Ethernet cable connection:
    1. Enter SSID
    2. Enter password
    3. Press „Set“ button
    4. Unplug Ethernet cable and reboot the camera.
  - By scan, using Web browser via Ethernet cable connection:
    1. Execute scan
    2. Select access point (AP)
    3. Enter password
    4. Press „Set“ button
    5. Unplug Ethernet cable and reboot the camera.
  - By WPS push-button, no network connection::
    1. Push WPS button on camera. The blue LED blinks slowly.
    2. Push WPS button on AP.
    3. Wait until blue LED lights continuously.
  - By WPS PIN:
    1. Execute scan
    2. Select AP
    3. Click „Connect with PIN“.
    4. At the access point, select the function „Add client with WPS PIN” or similar and enter the camera PIN within 2 minutes.
    5. Wait until the AP shows successful connection. At the same time, the blue LED lights continuously.
    6. Unplug Ethernet cable and reboot the camera.

       If a wireless connection already exists while WPS PIN is being activated, the existing connection will be interrupted during connection attempt to the new AP.
       On success, the new AP will be connected.
       On failure, connection to the former AP will be resumed.
       During the attempt the Web browser page cannot receive status updates and will simply count down until connection re-establishment.

  Generally, if the camera was first connected via Ethernet cable, the camera must be rebooted without Ethernet cable connected to switch to wireless LAN connection.

7.2 Changes with 5.92.0090

- Digital zoom improvement for AUTODOMEs.
- Image sharpness improvement by removal of Optical Low Pass Filter (OLPF) for below products:
  - DINION IP 7000 HD
  - FLEXIDOME IP 7000 RD
  - FLEXIDOME IP DYNAMIC 7000 RD
  - FLEXIDOME IP DYNAMIC 7000 HD DINION IP starlight 7000 HD
  - FLEXIDOME IP STARLIGHT 7000 RD
  - DINION IP STARLIGHT 7000 HD
  - DINION IP 7000 HD
- Sharpness slider behavior has been simplified to a range from 1 (less clear) to 5 (sharpest).
- Backup jobs initiated by enhanced recording modes via virtual alarms are now persistent over a power cycle. Pending backups to central recording are not lost anymore when a device reboots.
- Autoload Decoder is no more part of the firmware content. An MPEG-ActiveX download link, leading to DownloadStore, is provided instead.
- Platform type (CPPx) is now displayed in brackets behind device type.

7.3 New Features with 5.90.0126

Image Processing

- Improved color reproduction for NBN-733, NBN-832, NBN-932, NBN-71013, NBN-71022, NBN-71027, NIN-732, NIN-832, NIN-932 and NDN-733, NDN-823 and NDN-932 cameras
  - o A “dominant color auto mode” is introduced in “Advanced mode ->Camera->Picture Settings-> Color”. This white balance mode gives very natural colors in scenes dominated by a single color. Use this mode for scenes like the field in a football or soccer stadium or the table cloth on a casino table.
  - o For LED lighting there is a new “Basic auto mode” white balance mode in the same drop down box.
- Improved control over day-to-night and night-to-day switching behavior in all NBN-733 and NBN-71013 cameras, as well as the NIN-733 and NDN-733 cameras

  Day-to-night and night-to-day switchover sliders are shown on “Advanced Mode->Camera->Picture settings->ALC”. One is for setting the day-to-night switchover point and one is to set the night-to-day switchover point relative to the day-to-night point.
- Improved saturation control on all NBN-733, NBN-832, NBN-932 and NBN-71022, NBN-71027 and NBN-71013 cameras

  The Average–Peak slider on “Advanced Mode->Camera->Picture settings-> ALC” allows image improvement when bright light sources like headlights are in view. By adjusting the slider to Peak position, more details around the highlights remain visible. When moving the slider position to Average, darker areas in the image will show more details.
- NBN-832, NIN-832, NDN-832 and NBN-71022 cameras having IVA now also support intelligent AutoExposure (iAE).

Dome Cameras

- Controls added to “Advanced Mode->Camera->PTZ Settings”.
  - o "Tracker Zoom Threshold" for zooming camera out during Intelligent Tracking. If pan and tilt are too small during last 30 seconds the camera zooms out until it reaches “Tracker Zoom Threshold”.
  - o "Tracker Timeout" defines period of time for detecting pan and tilt movement. If it is not significant during "Tracker Timeout" camera zooms out itself.
  - o Buttons to show left and right auto pan limits.
- A custom tour can be defined on “Advanced Mode->Camera->Scenes and Tours”.

Fix Cameras

- Permanent analog output on the box cameras NBN-71022-B(A), NBN-71027-BA, NBN-71013-B(A)

  In the “Advanced mode-> Camera Settings-> Installer Menu” the aspect ratio of the permanent video output signal can be switched between 4:3 letterbox (default), 4:3 crop, 16:9 and off. The video signal standard is PAL for 25 and 50 IPS base frame rate, NTSC for 30 and 60 IPS base frame rate.

- 1.3 MegaPixel mode on selected cameras

  NBN-733, NDN-733 and NIN-733 cameras produced after June 2013, and all NBN-71013 cameras allow selection of Application Variant 1.3 MP.
  When this variant is activated in “Advance Mode->Camera->Installer Menu”, the camera supports 1.3 MP resolution (1280*1024 @ 25/30 IPS).
  When switching between Application Variant selections, the camera will reboot and activate factory default settings for the new variant.
  The settings made for the other variants will be lost which makes it advisable to set the Application Variant as first thing of a configuration.
  Please note that in this firmware release IVA is not working in the 1.3 MP Application Variant. IVA support for 1.3 MP variant is being considered for a future firmware release.

  Please note that for all cameras currently in the field the sensor blemish concealment in the factory has been performed on the sensor area used for 720p resolution. This means that, when these cameras are put into 1.3 MegaPixel mode with the FW 5.90, there is a slight chance that blemishes show up in the upper and lower band of 150 pixels that are available in the new mode (1280*1024). The blemish concealment in the factory on cameras produced from end of January 2014 onwards checks/corrects blemishes on the entire sensor area.

- User mode scheduler on all cameras supporting User modes.

  The camera can be set to switch between two User Modes at configurable times in “Advance Mode-> Camera->Picture Settings-> User mode scheduler”.

RTSP

- Search and playback from local recordings is possible using RTSP connections.
  A tech note describing the feature and the parameters is available.
- The multicast settings on the device are synchronized with a RTSP multicast request.
  - If a multicast group is configured on the device and the RTSP request does not specify a multicast group, the configured session is used.
  - If no multicast group is configured on the device and the RTSP request does not specify a multicast group, a random multicast group is used.
  - If the RTSP request does specify a multicast group, this multicast group is used.
- CGI parameters were extended to allow playback from secondary recording, e.g. *rtsp://<ipaddress>/rtsp_tunnel?rec=1&inst=2*

Recording

- A new Automated Network Replenishment method, ANR 2.0, has been implemented to avoid recording gaps. It provides a robust recording even on sporadic iSCSI connection loss or network outages.
  To achieve this it utilizes the devices' dual and local recording capability. The secondary recording, which is continuously written onto the local storage medium, functions as interim buffer for the primary recording that transfers this to the external iSCSI storage as long and whenever the connection is established.
  The time period to cover connection interruption depends on the size of the local storage medium and the data rate of the recorded stream.
  - o Information on internal fill level of the recording buffer is provided.
  - o The speed of the transfer from the secondary recording buffer to the primary recording on the iSCSI storage in the network can be dynamically controlled via playback speed and rate control.

  Please note:
  Setup of this feature is not possible via the devices' browser-based user interface.
  It can be set up via RCP commands.
  Bosch VMS 5.0 will allow enabling ANR 2.0 via its Configuration Client.
- Enhanced recording modes allow alarm recording with alarm-type specific, long pre-alarm times. Such can be triggered via virtual alarms with pre-alarm time and alarm duration specified. This function requires ANR 2.0 to be enabled.
  - o Textual information provided with the virtual alarm command is stored as metadata. This could be e.g. POS or ATM info.
  - o Bosch VMS 5.0 will use this feature in its multiple pre-alarm duration settings.
- Some cameras have multiple sensors such as accelerometer, temperature, or humidity sensors. Data from these sensors are added to the metadata stream and also recorded.
- Card media that reached maximum write cycles and would cause access errors are now mounted as read-only to ensure accessibility of stored recordings.
  This state is valid until the next media exchange, then re-checked.
- Storage configuration of two iSCSI LUNs is possible on a device for local recording.
- Alarm recordings can be automatically protected.

IVA

- Smart search is now also possible for faces.
- In all IVA-enabled cameras the default analysis type is set to IVA with default task "Detect any object" instead of MOTION+ to provide more accurate motion detection.

Miscellaneous

- A new media data watermarking/signing method based on certificates has been implemented. The video stream includes signatures from the device's certificate. By checking the signature against the certificate it received from the device, possibly even by a certification authority (CA), a client can prove if the received video stream or playback is really from the original source.
  - Video authentication can be selected from Off, Classic, MD5, SHA-1 or SHA-256.
  - The signature period can be configured to balance the required computational power with other functions required from the device to perform.
  - This new watermarking method requires VSDK 5.71 or later to be functional in the Web browser.
- Basic support of the Chinese standard GB/T 28181 has been implemented. This standard is based on communication using SIP protocol for connection setup and control. It also requires wider support of Chinese characters in name fields and on-screen display.
  - Camera name fields now directly support Unicode character input. The selection from the graphic character table is not necessary anymore but still functional for backward compatibility.
  - A large Chinese font providing more than 30.000 characters has been added to support the majority of Chinese Unicode characters.
- Display stamping can now be set to transparent background.
- The status of the local storage medium is provided in the SNMP MIB.
- Date and time information have been added to the beginning of each line in the maintenance log file.
- After a network link is re-established EAPOL communication is initiated to restart 802.1x authentication even if the switch does not initiate this.

Cloud-based Security and Services

- Certificate chain check has been implemented.

ONVIF conformance

- Conformance was tested using recent ONVIF test tool 12.12.

7.4 Changes with 5.90.0126

- “LIVEPAGE” has been renamed to “LIVE”.
- Menu “Advanced Mode->Network” and “Advanced Mode->Service->System Overview” page were re-structured to improve usability.
- Menus and terminology have been aligned over complete camera portfolio.
- Lens Wizard usability has been improved by combining step 1 and 2 on one screen.
  It also shows the zoom position in mm and hides the night slider in IR-corrected mode.
- A fix has been implemented for tracking control being active although IVA is disabled.
- Double-click for full-screen has been disabled for in-video-PTZ as it was often accidentally activated by fast PTZ mouse-clicks.
- Maximum I-frame distance in encoder profiles is now also based on configurable MAX_GOP_LENGTH_VALUE.
- Pre-alarm RAM buffer settings changed by a management system are now also shown in the drop-down list on the “Recording Profiles” page.
- ONVIF GotoHomePosition now accurately goes to home position.
- The issue where system date and time could not be changed via ONVIF has been solved.
- The issue in AUTODOME 7000 that video may stayed dark after homing has been fixed.
- An issue in AUTODOME 7000 HD where tracking may loose an object due to zoom values not being updated during tracking while zooming has been fixed.
- The issue in AUTODOME 7000 HD where a defined 'Virtual Mask' could be deactivated by clicking a 'Scene' button twice or by navigating from VCA page to LIVE page has been fixed.
- An issue in AUTODOME 7000 causing a reboot when clicking Tracking 'Auto' or 'Click' during the transfer of the scenes for the drop-down selection has been fixed.
- An issue where a device could become inaccessible after long run-time if configured servers could not be reached has been fixed.
- An issue with IE 11 showing a message that a device may not be responding due to a long-running script when forensic search returns many events (more than 1000) has been fixed.
- An issue where older recordings were not instantly listed on opening the Playback page has been fixed.
- ONVIF command GetVideoEncoderConfigurations now returns the correct multicast IP address.
- Image processing parameters like Privacy Masks, flip and mirror settings, are not lost anymore on firmware upgrade.
- Idle objects do not disappear anymore after 120 seconds even if the global idle debounce time is set higher.
  Please note that there are other issues that can cause problems keeping an idle object for a long time, so high idle time settings are not recommended.

7.5 New Features with 5.85.0016

- Support of DINION imager 9000 HD, NAI-90022-AAA.

7.6 Changes with 5.85.0016

- Fix implemented for analog output on FLEXIDOME VR (NIN-733/832/932).

7.7 New Features with 5.80.0073

Image Processing

- Sharpness increase by improvement of contrast enhancement.
- Color rendition and saturation improvement by retuning of color matrix.
- Improved spatial / temporal noise reduction balance to reduce low light motion blur.
    - iDNR now uses both spatial and temporal noise reduction instead of only temporal.
- Saturation control for reduction of blooming highlights and improved HDR capability (HDR cameras only).
    - Set to max peak for best HDR performance.
- Lower default day-night transition moment.
- Spatial filter slider and temporal filter slider power tensor (effort amplification) increased.

Domes

- Dropdown list for PTZ presets is added to View Control on LIVEPAGE. Display can be configured on LIVEPAGE settings.
- Buttons for 'show home' and 'find home' are added to the LIVEPAGE.
- New button ‘refocus’ added to LIVEPAGE to initiate one push button.
- Virtual Masking is added to Bosch Intelligent Tracking for AUTODOME series.
- Camera profile modes are added to AUTODOME series.
- Information regarding System Controller and CMC Version is displayed on the System Overview page.
- 256 presets are supported.

Cameras

- iDNR is available in IP 2000 and IP 5000 camera series.
- User modes can be switched on trigger and schedule–based (using Alarm Task Scripting).
- A 4:3 crop with resolution 1280x960 is available as a choice for the second stream.
  Note that first stream resolution must not exceed 720p30.
- Continuous analog output can be switched to specific modes.
  - Selectable 16:9 or 4:3 aspect ratio on the analog output of the NIN series cameras.
  - Selection of cropped 4:3 mode on analog output.

IVA and Forensic Search

- Intelligent Tracking has been added as event source to allow alarms or enable recording when tracking starts.
- IVA AUTODOME presets are increased to 16 from the previous limit of 10.
- Switch is added for 'IVA behind privacy masks' for AUTODOME Intelligent Tracking.
- A timeout parameter is added to posting of face images which allows posting best faces in defined periods independent of the person staying in scene.
- The Forensic Search Rule Engine now supports negative values in the "Resolution" statement, provides a version number and supports re-identification of objects from IVA.

Miscellaneous

- Display stamping is now automatically adapting to image resolution for better readability in downscaled views. Stamping for 720p is roughly doubled, for 1080p is roughly quadrupled in comparison to SD formats.
- Secondary DNS server is supported.
- DNS and DHCP addressing is combined via hostname.
- SMTP port is adjustable using parameter in the ATSL script.
- AAC audio bandwidth can be adjusted to low or medium bandwidth.
- Cloud connection status is reflected in the System Overview page
- Qualified authentication of a Bosch device based on certificates stored in the trusted-platform ID chip.

Integration

- Generalized RCP+ interface for picture settings (contrast, brightness, saturation).
- Generalized RCP+ interface CONF_VIDEO_INPUT_FORMAT_EX for camera base frequency to set 25/30 and 50/60 ips modes.

7.8 Changes with 5.80.0073

- The Encoder Profile matrix is reworked to reflect the bitrates of our modern encoders in specific scenes and re-organized to better explain the various use cases.
- Creation of profiles with identical name is now prohibited.
- When recording is started GOP length is set to 60 regardless of 50 or 60 Hz base modes. The default value of 60 can be modified.
- Retention time on local recordings now refers to the maximum time due to legal requirements. The former minimum retention time is not required in local recordings, thus overwrite checkboxes are discarded.
- Tamper alarms function as edge-triggers when starting recordings to avoid unnecessary long-term alarm recordings.
- Live Export is removed from I-Frame tab.
- The byte order of the command CONF_SET_VIRTUAL_ALARM_ID has been corrected to network byte order (big endian).

7.9 Changes with 5.70.0039

- Audio back-channel is now supported via SSL connections.

7.10 Changes with 5.70.0038

- Lens wizard timeout behavior is changed to close browser connection after 10 minutes.
- Audio back-channel is now supported via SSL connections.

7.11 New Features with 5.70.0038

- Support of new vandal-proof HD cameras
- Continuous analog output for vandal-proof HD cameras
- A 1280x960 crop mode, aspect ratio 4:3, is available in 1080p cameras.
- Device capabilities are included in XML response of network scan.

7.12 Changes with 5.60.0063

- RECORDINGS page renamed to PLAYBACK
- Tamper alarms like too noisy, too dark, reference check could have forced alarm recording for very long periods though no relevant material is captured. Tamper alarm recording has been changed to edge-trigger but tamper alarms are presented as long as they persist.
- FTP name scheme changed to allow sorting by date, new scheme like snap_cx_YYYYMMDD_hhmmss.jpg
- Due to legal requirements, minimum retention time has been changed to maximum retention time for local recordings.
- To fully comply with the RFC '_' characters are replaced by '-' in the MIB file.

7.13 New Features with 5.60.0063

- Support of DINION and FLEXIDOME 720p60 cameras NBN-733 and NDN-733

Encoder

- "Virtual cameras" through second instance of region-of-interest (ROI) stream 2, fully supporting independent electronic pan/tilt/zoom, session-based addressable
- Upright 9:16 ROI cut-out for portrait view (corridor mode)
- 4:3 ROI cut-out (D1/4CIF) to serve "old-world" viewing systems
- Area-based encoding to reduce unnecessary bandwidth. Up to 8 regions can be set for better or flawed encoding, depending on interest or importance of area.
- New SEI (supplemental enhancement information) packets are added to the video stream, providing information about timestamp and timezone of originating device, geographic information based on world coordinates, only available when fully calibrated, PTZ positions, and ROI cut-out positions.
- Auxiliary data packets are added to the AAC audio stream, providing information about timestamp and timezone of originating device.

Recording

- Fixed ROI recording, with E-PTZ off
- Support Dropbox cloud based storage as export location
- Accounts for FTP and Dropbox, 4 accounts possible.

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VCA

- Object tracker for E-PT-capable box cameras and ROI
- Face detection and Smart Search for faces, including rule engine syntax elements for best face, face quality and face size.
  Faces can be exported as high-detail JPEGs to configured accounts for further processing.

Miscellaneous

- Out-of-the-box support for Bosch Cloud-based Security & Services(CbS)
- Lease time for electronic pan/tilt/zoom (E-PTZ) of ROI, similar to true PTZ cameras
- Dynamic DNS extension to alternative providers no-ip.com and selfhost.de
- Central URL *http://downloadstore.boschsecurity.com* where devices automatically check for new FW when Internet access is provided.
- A JPEG thumbnail image is returned in auto-detect reply after network scan.
- ONVIF conformance to Profile S, validated with recent ONVIF test tool 12.06, with additional beta features of Profile G, like search service and replay service.