ezRecord Algorithm Explanation

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➢ **Objective:**

ezRecord, stands for easy recording. It automatically determines how long the DVR system can record as user needs.

➢ **Prerequisite:**

1. Six per-channel PPS/Weighting values as described in Table.

Per-channel PPS	NTSC:30 (PAL:25)	NTSC:15 (PAL:12.5)	NTSC:11.25 (PAL:9.375)	NTSC:7.5 (PAL:6.25)	NTSC:3.75 (PAL:3.125)	NTSC:1 (PAL:1)
Weight	9	8	6	5	3	1

2. Three "recording mode"/KBR sets are described in Table.

| Record Mode	Full-D1	Half-D1	CIF
KBR Range	8~20KB	5~17KB	2~14KB

➢ **ezRecord Realization:**

(1) Assumption: use's DVR system with DG208, 8 connected cameras and 400G HD.

(2) Configuration: Half-D1 mode (NTSC: 720$\times$240@60PPS) (Per-channel PPS: 7.5)

       Schedule (Day, Night, Weekend ON), Circular ON

(3) Max HD size per day = 8(cameras)$\times$7.5(PPS)$\times$17(KB)$\times$86400(sec/a day) = 84GB.

   So the real recording days are almost equal to 5 days in DVR system.

(4) Condition: Keep the latest 10 days' data constantly without adding any HD size.

(5) According to (1) ~ (4), three solutions are described in Table.

	DVR System (Constant)	Recording Days	Changed Factor	Satisfied Conditions (Per-Channel)
Solution1	**DG208 400GB**	**10**	**Reduce PPS or KBR**	**7.5PPS and 8KBR**
				3.75PPS and 16KBR
Solution2			**Reduce Cameras**	**From 8 to 4 cameras**
Solution3			**Schedule**	**Day and Weekend OFF**

Before: User must go through each step.

User —**Consider**→
1. HD Size
2. Camera No.
3. Total PPS
4. KBR Range
—**Get**→
1. Per-Channel PPS
2. KBR Value
—**Set**→ DVR
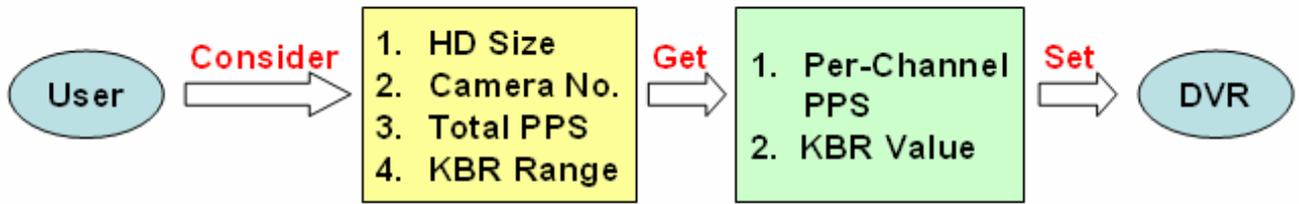
After: User only decide recording days.

User —**Decide**→ How Many Days —**Auto-Get**→
1. Per-Channel PPS
2. KBR Value
—**Auto-Set**→ DVR

(6) ezRecord flow

Anyone Change
1. Cameras
2. Record Days
3. Schedule
—**Auto-Trigger**→
1. Get current HD size
2. Satisfied per-channel PPS and KBR

Per-Channel PPS	KBR
M (Max:30)	N1 (Min~Max)
…	…
1 (Min)	Nn (Min~Max)

Min Record Days

Max Record Days

Algorithm:
Quality Level Value (QLV) = Weight x KBR

Compare ↓ **Get Winner**

Adequate per-channel PPS and KBR
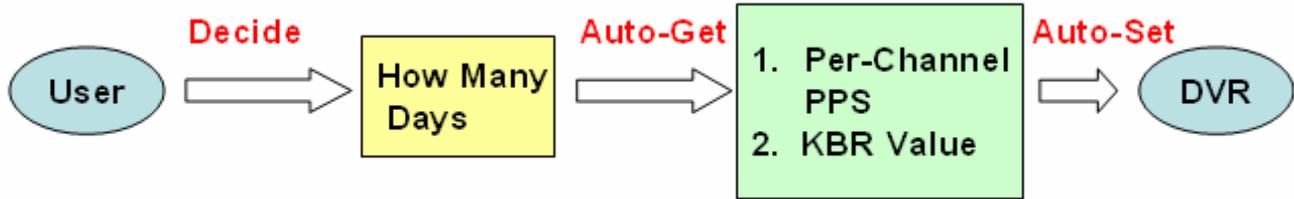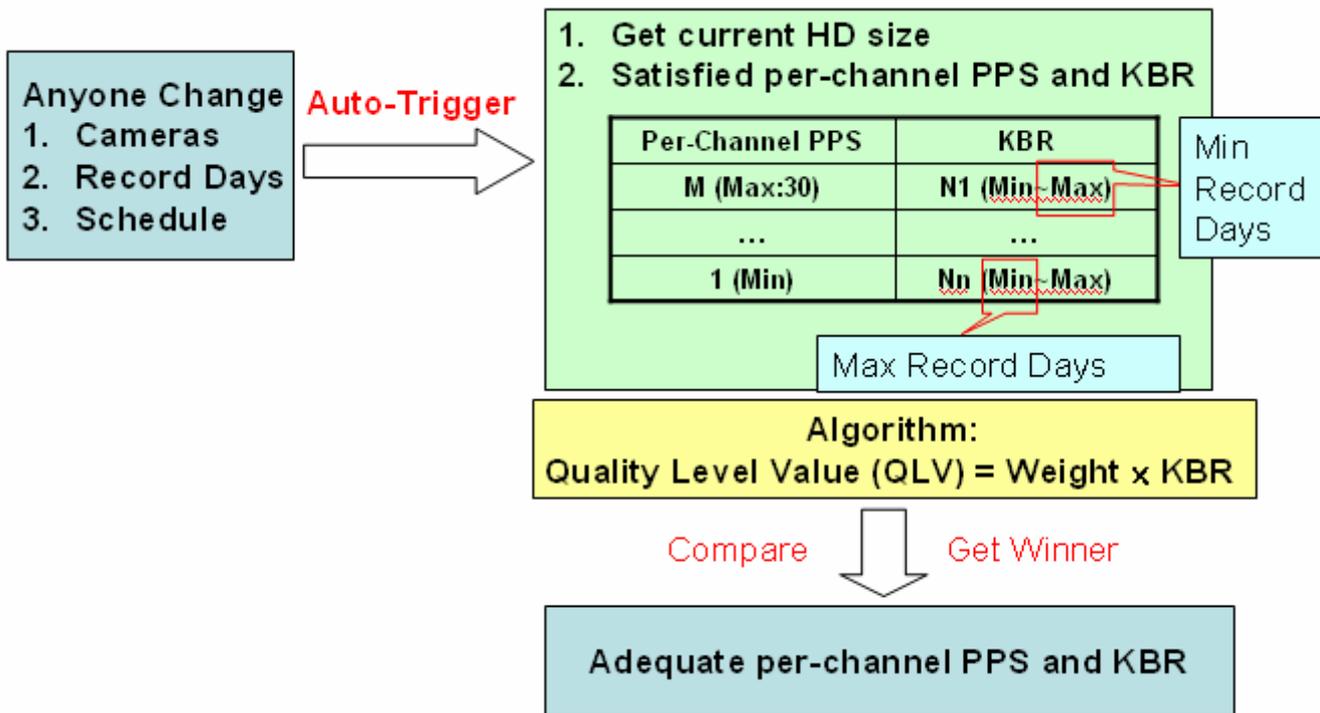
(7) Five-Quality-Level Definition

 Define the lowest limit of best level, and then divide QLV into five groups.

> ## Five Quality Level (All Possibilities):

(1) Record Mode: Full-D1 mode (NTSC: 720×480@30PPS) (PAL: 720×576@25PPS)

	Per-Channel PPS			KBR	QLV
	NTSC	PAL	Weight		(Weight × KBR)
Best	30	25	9	18~20	162~180
	15	12.5	8	15~20	120~160
	11.25	9.375	6	17~20	102~120
	7.5	6.25	5	12~20	70~100
	3.75	3.125	3	20	60
High	3.75	3.125	3	15~19	45~57
Mid	3.75	3.125	3	10~14	30~42
Fair	3.75	3.125	3	8~9	24~27
	1	1	1	15~20	15~20
Low	1	1	1	8~14	8~14

(2) Record Mode: Half-D1 mode (NTSC: 720×240@60PPS) (PAL: 720×288@50PPS)

| | Per-Channel PPS | | | KBR | QLV |
	NTSC	PAL	Weight		(Weight × KBR)
Best	30	25	9	16~17	144~153
	15	12.5	8	13~17	104~136
	11.25	9.375	6	15~17	90~102
	7.5	6.25	5	17	85
High	7.5	6.25	5	13~16	65~80
Mid	7.5	6.25	5	11~12	55~60
	3.75	3.125	3	15~17	45~51
Fair	3.75	3.125	3	7~14	21~42
Low	1	1	1	5~17	5~17

(3) Record Mode: CIF mode (NTSC: 360×240@120PPS) (PAL: 360×288@100PPS)

| | Per-Channel PPS | | | KBR | QLV |
	NTSC	PAL	Weight		(Weight × KBR)
Best	30	25	9	13~14	117~126
	15	12.5	8	14	112
High	15	12.5	8	11~13	88~104
	11.25	9.375	6	14	84
Mid	11.25	9.375	6	13	78
	15	12.5	8	9	72
	7.5	6.25	5	12~14	60~70
Fair	7.5	6.25	5	9~11	45~55
	3.75	3.125	3	10~14	30~42
Low	3.75	3.125	3	5~9	15~27
	1	1	1	2~14	2~14

> ## Addendum:

This section describes the relationship between Preset Configuration and ezRecord.

Assumption: Day, Night and Weekend are all set ON for ezRecord.

(1) Best Quality (Preset) VS ezRecord (Min Record Days) in Half-D1 or CIF mode

※**Best Quality (Total PPS/Total Channel), ezRecord(Total PPS/Connected Cameras)**

Cameras & Channels	Min Days	Comment
Connected Cameras = Total Channel	1	Best Quality is prior to ezRecord
Connected Cameras < Total Channel	1	Ambiguous
Connected Cameras = Total Channel	>1	ezRecord is equal to Best Quality
Connected Cameras < Total Channel	>1	ezRecord is prior to Best Quality

(2) Standard (Preset) is almost equal to ezRecord (High-to-Mid Record Days)

(3) Event Only (Preset) is almost equal to ezRecord (Day, Night and Weekend OFF)