

S.M.A.R.T.



Definition

- ▶ **S.M.A.R.T. (From the English self-monitoring, analysis and reporting technology -. Self-Monitoring, Analysis and Reporting) -**
Technology hard drive built-in self assessment of the state apparatus, as well as the mechanism for predicting the time of his exit from the building.

Hard drives with SMART version 2 and above offer a number of different tests:

- ▶ **Short**. Checks the electrical and mechanical parameters and reading performance. The test typically takes about two minutes.
- ▶ **Long / Extended**. The test checks the entire surface of the disc and has a time limit. On average, it takes about two to three hours.
- ▶ **Transport test (Conveyance)**. A quick test is designed to assess the condition of the disc after disc transport from the manufacturer to the supplier.
- ▶ **Selective**. Some discs allow you to check a certain part of the surface.

SMART test log can contain the results of the last test only 21, and is read-only. In other words, reset it by regular means impossible.

History

- ▶ An early hard disk monitoring technology was introduced by [IBM](#) in 1992 in its [IBM 9337](#) Disk Arrays for [AS/400](#) servers using IBM 0662 SCSI-2 disk drives.^[5] Later it was named [Predictive Failure Analysis](#) (PFA) technology. It was measuring several key device health parameters and evaluating them within the drive firmware. Communications between the physical unit and the monitoring software were limited to a binary result: namely, either "device is OK" or "drive is likely to fail soon".
- ▶ Later, another variant, which was named IntelliSafe, was created by computer manufacturer [Compaq](#) and disk drive manufacturers [Seagate](#), [Quantum](#), and [Conner](#).^[6] The disk drives would measure the disk's "health parameters", and the values would be transferred to the operating system and user-space monitoring software. Each disk drive vendor was free to decide which parameters were to be included for monitoring, and what their thresholds should be. The unification was at the protocol level with the host.

- ▶ Compaq submitted IntelliSafe to the Small Form Factor (SFF) committee for standardization in early 1995.^[7] It was supported by IBM, by Compaq's development partners Seagate, Quantum, and Conner, and by Western Digital, which did not have a failure prediction system at the time. The Committee chose IntelliSafe's approach, as it provided more flexibility. Compaq placed IntelliSafe into the public domain on 12 May 1995.^[8] The resulting jointly developed standard was named SMART.
- ▶ That SFF standard described a communication protocol for an ATA host to use and control monitoring and analysis in a hard disk drive, but did not specify any particular metrics or analysis methods. Later, "SMART" came to be understood (though without any formal specification) to refer to a variety of specific metrics and methods and to apply to protocols unrelated to ATA for communicating the same kinds of things.

Background

- ▶ Hard disk failures fall into one of two basic classes:
 - Predictable failures, resulting from slow processes such as mechanical wear and gradual degradation of storage surfaces. Monitoring can determine when such failures are becoming more likely.
 - Unpredictable failures, happening without warning and ranging from electronic components becoming defective to a sudden mechanical failure (which may be related to improper handling).

Technology S.M.A.R.T. It allows you to:

- ▶ 1.state parameters monitored;
- 2.scanning the surface;
- 3.scanning the surface with an automatic replacement of questionable sectors reliable.

► It should be noted that the drives can not report their own state by the SMART technology, but for this there are special programs. Thus, the use of technology S.M.A.R.T. is impossible without the presence of the following two components:

1. Software built into the drive controller;
2. External software embedded in the host.

Programs displaying state attributes

S.M.A.R.T.-operate according to the following algorithm:

- ▶ 1. Checking for support of storage technology S.M.A.R.T .;
- ▶ 2. Sending commands query S.M.A.R.T.-tables;
- ▶ 3. Getting tables in the application buffer;
- ▶ 4. Explanation of table structures, extract numbers and attribute a numerical value;
- ▶ 5. Comparison of standardized names of attributes numbers (sometimes - depending on the type, model, or manufacturer, such as a program Victoria);
- ▶ 6. Displays numeric values in readable form (for example, the conversion of hexadecimal to decimal values);
- ▶ 7. Extract from table flags attributes (attributes that characterize the purpose of the attribute in the drive, such as "vital" or "counter");
- ▶ 8. Displays general status of the device on the basis of all the tables, values and flags.

SMART-purpose or goal setting conditions

- ▶ Synonyms: SMART-approach / method

This term refers to a way of wording the immediate objectives.

So-called smart goals (from the English travel smart -. Smart) - a goal that meet the following requirements.

There are several options for deciphering abbreviations SMART. We offer you the most common interpretation of the abbreviations:

S **A** **T**
M **R**

S - specific, significant, stretching - specific, significant.

- ▶ This means that the goal should be as specific and clear. The extent of its "transparency" is uniquely determined by the perception of all. The goals you have to be clear and precise expression. In the process of setting goals is no place for global and uncertain approach. When goals are specific, they say to you and your employee a lot:
 - what is expected of him;
 - When;
 - how.
- ▶ The specifics will help you easily identify individual successes on track to meet the final objectives. Although each of the ultimate goal, is the next goal - the most important task! In her absence, the immediate goal is unattainable. It is an additional motivation (M).

M - measurable, meaningful, motivational - measurable, meaningful, motivating.

- ▶ The goal must be measurable, and measurement criteria should be not only on the end result, but also intermediate.

What good is a goal that can not be measured or assessed? If the goal is immeasurable, you can never know you have reached it or not! And the staff? They will lose all interest in the work, if they do not see the landmarks that define their success. In the absence of relevant "measurements" will be very difficult to maintain the proper motivation.

A - attainable, agreed upon, achievable, acceptable, action-oriented - accessible, coordinated, focused on specific actions.

- ▶ It is necessary to adequately assess the situation and understand that the goal can be achieved in terms of internal and external resources available to the organization / unit.
Goals should be realistic and achievable for any ordinary employee and the company as a whole. Of course, the best goals require some effort from people to achieve them, but they are never beyond. That's right: unattainable goals, as well as those that are below the normal level of professional staff, have no place in your organization. Too high or low target tend to lose their meaning, and you and the workers begin their simply ignored.

R - realistic, relevant, reasonable, rewarding, results-oriented - a realistic, relevant, useful and result-oriented.

- ▶ The goal should be realistic and appropriate in a given situation, should fit in and not to disturb the balance with other objectives and priorities.

Justified (relevant) objectives should be an important tool in the overall scheme to achieve the vision and mission of your company. Everyone is familiar with the Pareto rule, when 80% of the results come from 20% of the effort, or 20% of the goods give 80% of revenue.

We can only guess what is happening inside the ratio of 20/80! You need to know where and what is 20% of the goods of your company.

T - time-based, timely, tangible, trackable - for a certain period, timely, traceable.

- ▶ Term or the exact period of performance - one of the main components of the goal. She may have a fixed date, and cover a specific period.
- ▶ The objectives of the train must have a departure time, arrival time and clearly established the duration of the movement, as well as perform. Such a time limit helps to focus on the goal at a given time, or even earlier. Goals without deadlines or time schedule, often vulnerable to daily crises, possible in any company.



Peter Dreker in 1954 introduced the **SMART** word, which consists of five goals is the word abbreviation:

- ▶ **Specific-** specific goal
- ▶ **Measurable-** measurable goal
- ▶ **Achievable-** attainable goal
- ▶ **Realistic-** realistic goal
- ▶ **Timed-** specific time goal

Система критериев SMARTER

S	Specific (Конкретные)	Четкость, ясность формулировки цели
M	Measurable (Измеримые)	Наличие критериев для определения степени достижения цели
A	Achievable (Достижимые)	Соответствие цели опыту подчиненного
R	Relevant (Уместные)	Установление связи цели с актуальными задачами
T	Timed (Согласованные во времени)	Ограниченность цели сроками ее достижения
E	Evaluated (Оцениваемые)	Оценка каждого этапа в достижении цели
R	Reviewed (Гибкие)	Пересмотр и периодическая коррекция цели

SMART GOALS:

S

Specific

M

Measurable

A

Achievable

R

Relevant

T

Time-based

S. M. A. R. T.

p
r
e
c
i
s
i
f
i
c

конкретность

e
a
s
u
r
a
b
l
e

измеримость

c
h
i
e
v
a
b
l
e

достижимость

e
l
e
v
a
n
t

значимость

i
m
e
-
b
o
u
n
d

временная
определенность

S

Specific

What, Where
How?

A specific goal is distinct & defines as much of the goal as possible and contains no ambiguous language

M

Measurable

From and To

A measurement gives feedback and let's one know when the goal is complete.

A

Assignable

Who?

Goals must be assignable to individuals or groups

R

Realistic

Feasible?

Realistic goals are challenging yet attainable within the given timeframe

T

Time-Based

When?

Timeframe must be aggressive yet realistic



Thank you for your attention!!!)

