

Always-On Enterprise Information Systems for Always-On Business

Nijaz Bajgoric

School of Economics and Business in Sarajevo, University of Sarajevo, Bosnia and Herzegovina

INTRODUCTION

In order to become and stay competitive, today's business must be "always-on" from continuous computing and data availability perspectives. The main prerequisite for such a kind of business is an enterprise information system that operates on "always-on"/"100% uptime"/"zero downtime" basis or which is characterized by a "near-it" solution described by high availability, reliability and scalability ratios. Therefore, most organizations in e-business era seek for such an information infrastructure that is supported by an "always-on" enterprise information system (Bajgoric, 2006, 2010) which should provide a platform for an "always-on" business. Forrester (2013) recently noted that "across all industries, there is less and less tolerance for any kind of downtime. ... As a result, key stakeholders in the organization are demanding much higher levels of IT service availability."

The article aims at developing an implementation framework for an "always-on" enterprise information system ("A-On EIS") as a new generation of business computing model for "always-on" business. In other words, the role of such an information system is considered mission-critical in achieving high availability ratios of business-critical application platforms and consequently in enhancing business continuity. The framework has been developed by using a) Turban et al. (2010) model of business pressures, extended in terms of an additional pressure, and b) systemic framework as defined by C.W. Churchman (1968, 1971). In addition, in order to demonstrate an integrated operating platform as a core component of such a system, HP's HP-UX server operating platform has been presented. Several continuous computing technologies and features of the HP-UX platform are identified and presented in the form of a business case in order to illustrate possible practical implementations of the concept of "always-on" information system.

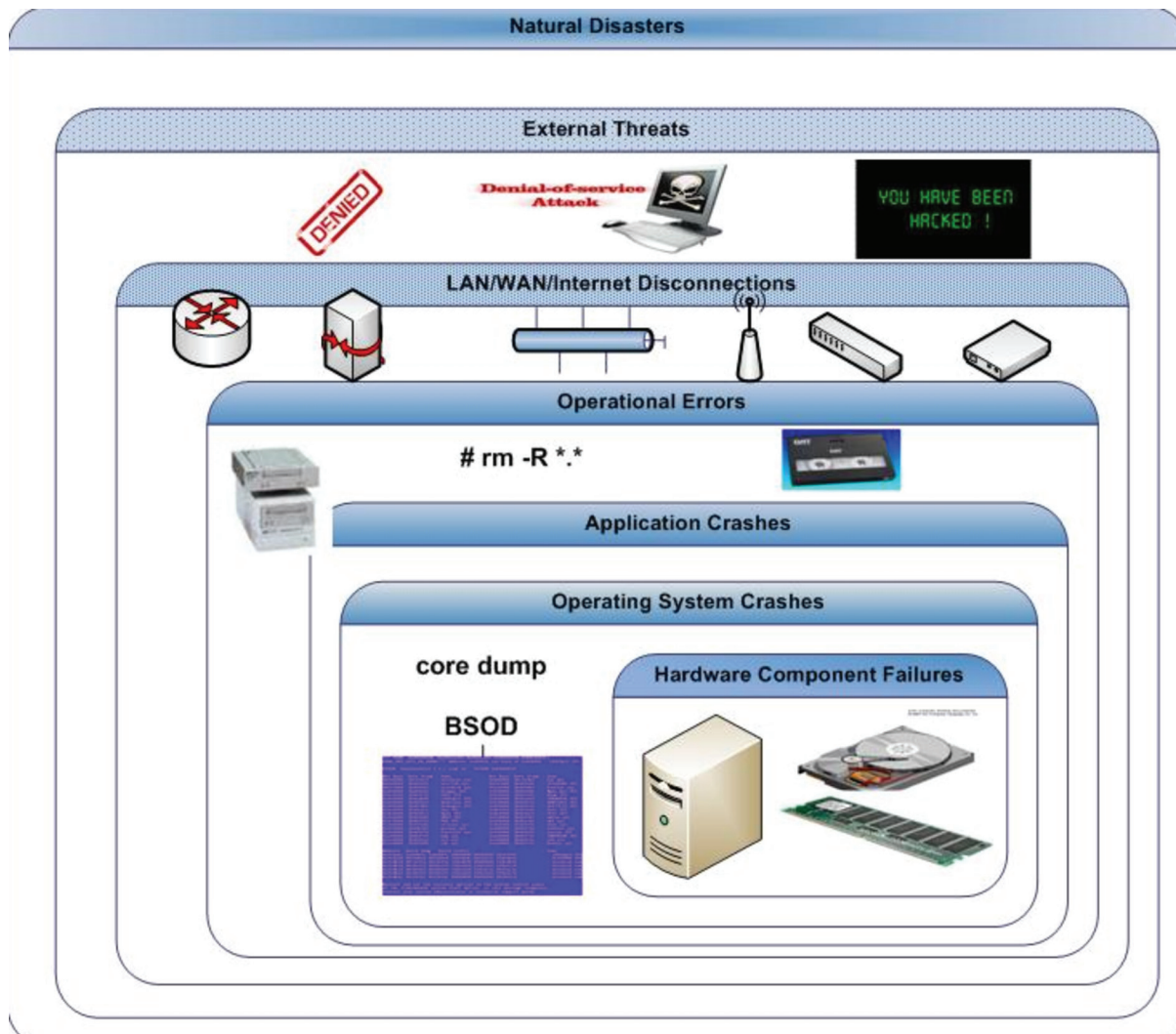
BACKGROUND: DOWNTIME POINTS IN MODERN BUSINESS

Today's enterprises are exposed to several types of business risks coming from outside and inside the system. They implement information technologies in order to mitigate these risks. However, in the same time, the processes of implementing, using and managing information technologies bring some specific IT-related business risks as well: technical glitches, physical damages, natural disasters, system crashes, application bugs, operational mistakes, human errors, logical threats (Figure 1).

Physical threats result from any kind of physical damage that may occur on IT centers, servers, hardware components, communication devices, etc. Natural-catastrophic event such as fire, lightning, flood, earthquake, hurricane, tornado, snow, can damage IT-centers and cause applications/data unavailability for some time. Logical threats may have different forms such as deleted system files, corrupted files, broken processes or programs, corrupted file system, crashed operating system. Technical glitches relate to the hardware component failures that may occur on computer components/devices within the IT infrastructure. Operating system crashes make all applications and data stored on enterprise servers unavailable. Application software defects, failures and crashes may have different forms such as bugs in programs, non-integrated or badly integrated applications, file corruptions. LAN/WAN/Internet problems, in addition to possible hardware glitches on data communication devices, include the problems such as those with Domain Controllers, Active Directory, DNS configuration files, DNS servers, network configuration files. Stanton (2005) stated that it can take less than 60 seconds for a company's reputation to be ruined and its business to be crippled. Human errors comprise of accidental or intentional file deletion, unskilled operations, intentional hazardous

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Figure 1. Major threats that cause downtime



activities including sabotage, strikes, epidemic situations, vandalism.

A number of IT-related problems that cause downtime may occur within all types of information architectures that are in use today. Some devices/locations at which a downtime may occur can be identified in both client/server and cloud-based information architectures (Figure 2).

These downtime points are considered critical points of action in creating continuous computing solutions for enhancing business continuity, such as: hardware glitches on client devices, crashes on the client operating systems (desktop/portable/mobile), client applications, LAN/WAN/Internet – disconnections from servers, crashes on server operating platform

(dump on core operating system, application protocol, library, network protocol, security intrusion, etc.), problems with data storage (hard disk crash, file/file system corruption, tape broken, etc.).

Even in the cloud computing model, these kind of downtime points can be identified. As reported by CIO (2013), "Web-based services can crash and burn just like any other type of technology." Marshall (2013) provided a story about the cloud service provider Nirvana that "... has told its customers they have two weeks to find another home for their terabytes of data because the company was closing its doors and shutting down its services." Brende and Markov (2013) considered the most important risks inherent to the cloud computing. Aberdeen Group (Csaplar, 2012) found that between

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