Obsolescence and the OpenVMS Operating System
An Emerging Technology Issue at Newfoundland Power

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Introduction

Information technology is a necessary and vital component of the resources required to provide low cost, efficient and reliable customer service. The need to replace and modernize information technology infrastructure is fundamentally the same as the ongoing requirement to replace and modernize any other component of the Newfoundland Power's (the Company) electrical system infrastructure as it deteriorates or becomes obsolete. One of the major components of the Company's information technology infrastructure is the OpenVMS operating system.

In recent years there has been a gradual trend away from the OpenVMS operating system in the information technology industry. The increasing popularity of operating systems such as Microsoft Windows and Unix, as well as the rapid developments in Internet technologies, have been key factors in this trend.

Many of Newfoundland Power's business applications are installed on OpenVMS. This report examines the issue of declining software vendor support of the OpenVMS operating system, and the implications of its obsolescence within Newfoundland Power.

Background

Newfoundland Power's information technology (IT) investment is comprised of two basic components: 1) applications, and 2) technology infrastructure.

The applications component consists of a range of technology tools that support business processes at the corporate, workgroup and individual employee level. Applications include common business tools such as electronic mail, while others such as the Customer Service System (CSS) provide functionality that is specific to Newfoundland Power.

The technology infrastructure consists of a variety of components including personal computers (PCs), larger multi-user computers known as shared servers, peripheral devices such as printers and scanners, and a variety of software tools such as OpenVMS and Windows that allow the various components of the infrastructure to work together to form a network infrastructure.

What is OpenVMS?

OpenVMS is a software tool that is categorized as a server operating system. It is a critical component of Newfoundland Power's current technology infrastructure and its purpose is to:

- control server hardware and manage how this hardware functions;
- enable applications to reside on servers and to utilize capabilities such as processing capacity, memory and storage;
- manage how the server connects to the network infrastructure;
- manage server security and application access by computer users;
- allocate server resources between multiple users and applications; and,
- manage the performance of the server and applications.

The History of OpenVMS

OpenVMS and its predecessor, VMS, have a long history dating back to 1977 when it was first made commercially available by Digital Equipment Corporation (DEC). Through the 1980's, DEC's OpenVMS operating system, along with its mainframe hardware and first-rate support, enabled DEC to compete with the best offerings of other leading vendors such as IBM.

In the mid-1990's, OpenVMS evolved to support the movement from mainframe computing to client-server computing with personal computers playing a larger role in supporting computing requirements. OpenVMS, together with other DEC assets, were sold to Compaq Computer Corporation in 1998.

Since the mid-1990's, Microsoft has emerged as a leader in the operating system software market with its Windows line of products. There has also been a rapid expansion in the development and use of Internet technology. A combination of these and other factors has led to the decline in market acceptance of OpenVMS as a leading operating system platform.

Technology Obsolescence

The rapidly evolving information technology industry produces a continual stream of new products focused on identified or perceived needs. Like many other industries, information technology products generally follow a cycle of market introduction, assessment, acceptance or rejection and ultimate replacement by a new or substantially changed product. The timeframe involved varies greatly by product but is generally based on market interest and momentum.

Technology obsolescence occurs when a product is no longer able to meet market needs. The actual reasons can vary from limited technical capabilities to a lack of alignment with industry standards. Regardless of the cause, the result is the same. Independent software vendors will discontinue further development of the technology on the grounds that there is insufficient market to justify additional investments. As vendors abandon older technologies to pursue new market opportunities, support for the technology will eventually be discontinued.

What are the signs?

Leading IT analysts such as the Gartner Group[1] often provide early warning signs of the potential decline of a technology. Through regularly published articles, seminars, conferences, and client consultations, these groups project the success or failure of specific technology vendors and products.

A key indictor of the position of a technology in the market is the extent to which the technology is considered strategic by major application vendors. The strongest advocates of the decline of OpenVMS indicate that the lack of development of OpenVMS-based products among these vendors is a major concern.

Other indicators include:

- the lack of coverage of the product at conventions, conferences and trade shows;
- training is no longer available;
- consultants with OpenVMS skills are increasingly more difficult to find and the costs are increasing; and,
- colleges and universities have removed the technology from their academic programs.

What are the implications?

The impact of a technology becoming obsolete is complicated by the fact that most IT environments consist of a variety of interrelated software products. This is particularly the case

[1] Gartner Group is a research and advisory firm that helps more than 10,000 businesses understand technology and drive business growth. Founded in 1979, Gartner is headquartered in Stamford, Connecticut and consists of 4,600 associates, including 1,400 research analysts and consultants, in more than 80 locations worldwide.

when referring to an operating system since it comprises a significant portion of the platform (the other major component being the shared server) upon which most other products operate.

This interrelationship between software products is critical to ensuring that the software applications they support remains efficient and capable of supporting the specific function of the Company for which the application was developed, such as customer service. If a vendor for one of these software products decides to stop developing newer versions of its product on OpenVMS, the entire application becomes unstable thereby jeopardizing customer service and operating efficiencies.

Newfoundland Power's Assessment of the OpenVMS Situation

When will OpenVMS decline?

To date Newfoundland Power has received two OpenVMS related notifications of discontinued support for a specific software technology. The first was from Andersen Consulting in 1995 relating to their discontinuation of development, and eventually support, for some of the technical components of the CSS. In July 2000, StarGarden, the Company's Human Resources and Payroll software vendor, advised that they were discontinuing support for components of their software that use proprietary data storage on the OpenVMS platform. This notification of discontinued support was a factor in the decision to replace the Human Resources and Payroll software in 2001.

Newfoundland Power has experienced other signs that OpenVMS is in decline. This includes slower response to support calls, waiting longer to have software bugs fixed, and very limited access to experienced OpenVMS staff across Canada. The Company recently had to conduct an exhaustive search to find qualified resources to assist with a very technical OpenVMS problem with an Oracle database software product.

The Gartner Group holds the view that "..*organizations with high third party software dependencies should plan to be off OpenVMS by 2003; organizations with maintainable owned source (in-house developed) should plan to be off OpenVMS by 2005.*" Gartner bases this recommendation on its broad knowledge of the enthusiasm for OpenVMS among its 10,000 clients and the declining investments that vendors are making in OpenVMS-based products.

Gartner Group acknowledges that COMPAQ itself maintains a commitment to OpenVMS and in fact may see the OpenVMS environment survive to support very specific applications such as e-business for an indefinite period of time. However, software industry support for OpenVMS as a general-purpose operating system platform for new application development is in decline.

While the decline of OpenVMS has already begun, its duration is likely to be a long and drawn out process because of the large number of vendor products currently installed. Predicting the timing of the decline is also complicated by the many contributing factors and the volatility of the IT industry.

What are the risks?

Applications written by third party software vendors represent the most significant risk for Newfoundland Power. The Company is highly dependent on the vendors to provide support for these applications and to complete enhancements to ensure that their software continues to work with other dependent technologies. The loss of support from a key vendor would substantially reduce the reliability of these applications and would subsequently affect customer server levels and operating efficiencies.

The implications of changing a well-established operating system like OpenVMS are significant. In addition to the effort required to replace the existing applications, all components of the technology infrastructure must also be addressed. In addition to the potential costs involved, there is also the potential for business interruptions through the transition process.

Newfoundland Power is using research, experience and the advice of industry experts in planning for the risk associated with OpenVMS. There is the possibility that support for OpenVMS could be discontinued on a large scale sooner than expected. This would shorten the period of time available to change out existing applications and build the new infrastructure to house these applications.

Newfoundland Power's Plan for Addressing the OpenVMS Issue

Overall Approach

As part of its 2001 business planning process, the Company began to develop plans for addressing the Company's dependence on OpenVMS. The main strategies the Company will employ in guiding the decommissioning of OpenVMS are:

- allow normal application attrition to be a key determinant in the replacement of most applications;
- complete the work over a five to seven year period to facilitate an orderly decommissioning of the OpenVMS environment and to minimize any potential negative impact on customer service;
- capitalize on opportunities to improve operating efficiencies and customer service while replacing applications;
- maintain normal investment diligence by continuing to apply the principles of the IT strategy the Company has adopted to guide its IT investment decisions; and,
- maximize the life of IT assets to the extent possible.

In the next three to five years, many of the Company's existing applications will require a major upgrade or replacement because they lack required functionally to support current or anticipated future business needs. This normal application attrition will resolve much of the OpenVMS issue as major upgrades or replacements will include migrating off of OpenVMS. The Business Support Systems project that began in 2001 is an example of how normal application attrition will contribute to the resolution of the OpenVMS issue.

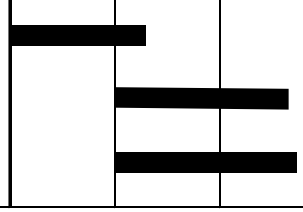
Replacing critical applications presents an opportunity to improve or enhance the functionality of existing applications. For example, when replacing the materials management system newer electronic commerce capabilities can be added at a reasonable cost as newer solutions are considered. Application change-out decisions will consider opportunities to improve Company operations.

Moving forward, Newfoundland Power will continually monitor developments in the IT industry, particularly as they relate to OpenVMS. It will be important for the Company to maintain sufficient pace to complete the decommissioning of OpenVMS over the planning period and to be well positioned to adjust its overall strategy if the need arises.

Schedule

A high-level schedule for replacing OpenVMS based applications is provided in the following table.

	2000	2001	2002	2003
Business Support Systems				
Facilities Management				
Operations Support Systems				



The Company has chosen to focus initially on its Business Support Systems including its Human Resources, Financial, Payroll and Materials Management applications. These applications represent a particularly high risk due to their high level of dependence on OpenVMS, their high level of dependence on third party vendors for support and maintenance, and the limited number of similar installations of the application in other organizations. The Company has included funding to support this phase of the plan in the 2001 and 2002 capital budgets.

In 2002 and 2003, the Company plans to address applications that support the Operations and Engineering areas of the business. These include Facilities Management and Operations Support Systems. In addition to addressing the modest dependence on OpenVMS in this area, the Company expects to realize significant benefits in this area through operating efficiencies facilitated by the improved use of technology. The proposed capital budget for 2002 contains a provision to initiate the Facilities Management and Operations Support Systems aspects of this schedule. Additional funding will be required in 2003 to complete these initiatives.

There are two other OpenVMS systems to be addressed: Outage Management and Customer Systems. Newfoundland Power expects the Outage Management and Customer Systems phases to be the most challenging due to the complex nature of the applications that comprise these portfolios and the importance of these applications in providing high quality customer service. Existing Outage Management and Customer Service applications are highly dependent on OpenVMS but for the most part were developed in-house by Newfoundland Power staff. The risk associated with the dependence on OpenVMS platform for these systems is acceptable for the next three to five years, since Newfoundland Power staff supports these applications.

Experience gained through the previous phases of the OpenVMS initiative will help ensure these applications are addressed in an efficient and effective manner.

Projected Costs

A schedule of estimated budgetary requirements to support the decommissioning of the Company's OpenVMS environment is provided in the following table:

	2001	2002	2003
Business Support Systems	1,303,000	590,000	-
Facilities Management	-	939,000	270,000
Operations Support Systems	-	1,322,000	636,000

The costs for the replacement of the Outage Management and Customer Systems are difficult to estimate at this time, since the potential vendors for these projects have not yet been evaluated. The anticipated replacement period for these applications is in the three to five year time frame, subject to change based on IT industry developments. This is a manageable level of risk since these applications have been written and supported by Newfoundland Power staff. As well, moving the replacement of these applications out into the three to five year timeframe will allow the Company to maximize the lives of these assets.

Summary

Independent software vendor support for the OpenVMS operating system is in decline. Newfoundland Power has experienced several examples of the impact of this issue, and is responding accordingly. The Company anticipates this issue will continue to emerge in the near term and has initiated plans to mitigate the risks, thereby minimizing any negative impact on customer service and operating efficiencies.

Moving forward, Newfoundland Power will continue to monitor IT industry developments, especially with respect to OpenVMS, and adjust its plans accordingly.