OPERATING SYSTEM EVALUATION CRITERIA

This appendix provides further details on criteria for evaluation of Operating System.

Nine features on which to compare Operating Systems when considering their use for enterprise/internet/intranet applications are:

1. Reliability
2. Security
3. Scalability
4. Manageability
5. Interoperability
6. Adaptability
7. Ease of Development
8. Affordability
9. Ease of Use

These criteria are explained below:

Reliability: Reliability is a measure of how consistently the machine runs the applications and services. The integrity of the data in memory, as well as that written to disk is extremely important. A file, disk or database system, which allows even a small percentage of corruption, would cause severe adverse effects on business functions; and a system with chronic problems in this regard would quickly become worthless in any organisation. Basically an operating system’s reliability is measured in two ways; the integrity of the information, and its ability to recover and repair damaged information. These things certainly include integrity checks, correction algorithms, both synchronous and asynchronous rights, and the ability to perform lock management.

Security: Security is the ability of the system to protect itself from denial of service attacks, as well as intrusions. After protecting data from accidental damage in the reliability criteria, how well data is shielded from wilful destruction or modification is paramount. Modern computer security must also be concerned with protection of the privacy and integrity of data traversing networks (LANs, WANs, Intranets and the Internet). The security of an operating system is the major barrier preventing all-out commercialisation of web transactions. This means, by necessity, any operating system today will have cryptographic functionality added to it for encrypting, check summing, and ‘signing’ data and control messages.

Scalability: By having a system that can be scaled up or down, one can prevent the ‘too little’ or ‘too much’ syndrome. We measure scalability on several fronts, such as
the number of processors supported, the number of file sizes supported, bit structures supported, and the logical file systems supported. More importantly, we assess the ability to adapt to a growing environment without having to prepay for over capacity.

Manageability: Manageability represents the set of features, which automate the operation of the server, as well as leverage the few skilled personnel responsible for administering the machine and the OS. Installing new system and application software and maintaining and monitoring them are prime factors requiring human intervention once a server is set up. Another issue, which must be considered, is the environment in which the systems need to reside (can one use a large machine to do several things, vs. using multiple smaller machines).

Interoperability: We live in a world with the old, the present, and the future. Interoperability must be viewed from applications and environments, which have been our legacy, as well as environments we are currently deploying. However we cannot lose sight of the fact that the world is changing, and we need systems that can work with new environments. More importantly, we need to consider the philosophy behind the individual solutions regarding interoperability strategy.

Adaptability: Adaptability is the measure of how well the operating system "plays with others" in today's heterogeneous environment of legacy terminals, traditional client applications, new "browser" user interfaces, as well as devices not yet fully accepted nor widely implemented (Network Computers, PDAs, Java terminals, etc.) Adaptability is also judged by the software programming packages that can be used to develop client applications that will interface with processes running on the server, as well as the number of popular database server software implementations that run on the OS platform.

Ease of Development: Ease of Development looks at several things such as the flexibility and extensibility of development tools, debuggers, testing and other types of development environments.

Affordability: Affordability is looked at in two different ways. Pricing and support are major parts, but the ability to have proven performance is paramount to any decision for a mission-critical application. It is important not to be fooled by a low initial price tag, no matter how attractive, but attend to the on-going cost to support the entire environment.

Ease of Use: When considering ease of use, one is tempted to look only at the initial installation and the GUI features. Such a superficial evaluation can lead to real issues in the daily operation of the environment. When considering an operating system, look not only at ease of installation, but also at managing the environment, ease of growth, ease of integrating different elements to the environment, keeping it secure, and so on.