Modernizing Legacy HP NonStop Applications: From the Ground Up and from the User In

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Introduction: The Imperative to Modernize Legacy Applications

When you take a step back and look at how the world of IT has changed in the past few years, it is pretty astounding. Advancements in mobile devices and applications, cloud services, big data, and a number of other areas have contributed to fundamental shifts in virtually every industry—and the pace only seems to be quickening.

These rapid and substantive changes can bring both opportunities and challenges for organizations. Eventually, for organizations to survive in this quickly changing environment, they have to evolve and enhance their services and capabilities—and legacy technologies can represent an increasingly significant impediment in meeting this demand.

For IT teams, it isn’t necessarily straightforward to know whether to try to keep working with legacy technologies as is, modernize them, or scrap them altogether.

While the costs of tackling the challenges of legacy technologies directly can be significant, they can pale in comparison to the expenses of continuing to work with these legacy systems in their current state.

Modernizing NonStop Applications: Key Considerations

Loosely defined, the term “legacy” refers to older technologies that are costly to maintain and resistant to change. For readers of The Connection, it is important to understand the fundamental differences between Tandem systems and current HP NonStop server platforms. Given their cost and inflexibility, the Tandem platforms of decades ago would absolutely meet the legacy criteria today: While they introduced revolutionary capabilities and technologies at the time, they were built using proprietary hardware and provided little support for software “openness”. On the other hand, today HP NonStop systems are still providing the core differentiators, including scalability and reliability, that helped Tandem Computers gain market prominence - while also being truly open and very cost effective.

While they were designed decades ago, typical Tandem applications still running today have an architecture that abstracts database, server, and client logic layers. This architecture enables effective modernization (see Figure 1). Further, HP has made clear that they remain committed to the HP NonStop platform, having recently announced support for x86 systems as well as future visions for the platform, including the potential for the systems’ virtualization.

For many organizations, the problem isn’t with the HP NonStop system itself, but the way the system is being used. When hearing this legacy phrase, people often associate the term with legacy systems. However, it is important to recognize that it is often the applications themselves that are legacy, rather than the platforms these applications run on, and this is largely the case in HP NonStop environments. Simply put, HP has modernized the system, now it’s time to modernize the applications.

Application Modernization: The Alternatives

For organizations looking to update applications running on HP NonStop, there are three potential approaches:

- Replace the existing application with new custom development. Often, this effort can be accompanied by a switch to a platform that is thought to be cheaper and more open. Embarking on the development of a new custom application, whether on a new platform or the existing system, can require the extensive investment of resources and staff time, not just for IT but for business users and management as well. As a result, these undertakings can be risky: As The Standish Group discovered through its ongoing research,1 the vast majority of these projects end in failure. Ultimately, after significant investments have been

1 The Standish Group has been collecting information on real-life IT environments since 1985, and has amassed a database containing information on 50,000 software development projects. The Standish Group uses this database to assess individual projects and project portfolios. To learn more, visit www.StandishGroup.com/modernization.

Figure 1: This diagram describes an application designed using SCREEN COBOL and Pathway. This application features an abstraction layer between database, server, and client logic. There are many applications built against this exact scheme still in productive use today.
SCOBOL “green screens” can be tedious and time consuming. For organizations, these interfaces are costly. Users have to invest extensive training time to become proficient. Further, these interfaces require scarce expertise to support, and they’re difficult to update and enhance. By using tools that leverage and extend the 6530 (or 3270) data streams, organizations can do real-time conversions of these green screens into a graphical user interface. At their most basic level, these tools automatically convert input fields into text boxes and function keys into buttons. This process is commonly known as screen scraping. Many of the tools available also offer authoring capabilities that enable administrators to customize screens, combine multiple screens, and so on. These capabilities enable an extra layer of modernization, while requiring minimal coding or effort.

Server Layer Modernization

In order to take a step beyond screen scraping, a development team could rewrite the presentation layer logic’s SCREEN COBOL code and have the new code directly access existing Pathway servers. This enables developers to leverage all the business logic that exists in these servers. IT teams can either use rich clients to gain direct access, or they can set up a three-tiered architecture with a SOAP server on the middle tier and a SOAP client, Web client, or mobile phone application in the client tier. In this way, businesses can extract the full potential of existing business logic by providing access across a wide range of platforms. This enables IT organizations to use industry-standard tools and technologies to create a modern user experience, while leveraging their existing investments in the HP NonStop platform and associated business logic.

Database Layer Modernization

In application development today, a key principle is to develop once and deploy many times. It is de rigueur today for software development teams to write platform agnostic code using industry-standard tools, so they can flexibly deploy where needed. We believe that if an application needs to be highly scalable or reliable, you should deploy those services on the HP NonStop platform. However, if you’re using Enscribe today, you can’t take advantage of HP’s modern development tools and the flexibility they provide.

In-place Modernization: Layer by Layer

If applications are continuing to provide business value, modernizing them can present significant benefits. Compared to ripping and replacing legacy applications or trying to keep working with inflexible, costly application environments, this option can substantially reduce risk, improve return on IT investments, cut development and maintenance costs, accelerate time to market for new services and offerings, and much more.

Presentation Layer Modernization

As anyone who has worked with them can attest, using native environment.

<table>
<thead>
<tr>
<th>CASE 1: NEW DEVELOPMENT</th>
<th>CASE 2: PACKAGE</th>
<th>CASE 3: MODERNIZATION</th>
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<tbody>
<tr>
<td>User Involvement</td>
<td>Hard</td>
<td>Hard</td>
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<tr>
<td>Executive Support</td>
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<td>Clear Business Objectives</td>
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<td>Emotional Maturity</td>
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<td>Time</td>
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<td>Decisions</td>
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Figure 2: Doing in-place modernization offers many advantages compared to other alternatives. Source: The Standish Group

made, many organizations have to move back to square one: the old, legacy application.

- **Purchase a software package as a replacement.** This can also be an expensive and risky proposition. Further, invariably, any off-the-shelf application will require a fair amount of integration and customization work, expanding the up-front investment required. The other risk associated with a package replacement is the loss of custom functionality that has been built into the legacy application over many years, and that is unlikely to be found in, or easily added on to, an off-the-shelf package. Compared to a total application rewrite, the risk associated with this approach tends to be somewhat lower, but is still very high, according to The Standish Group’s studies.

- **In-place modernization.** This route represents an incremental process, and consequently has the lowest amount of risk and costs for the business, a point that has been proven by The Standish Group’s research. By leveraging the existing environment, IT teams can reduce the time commitments required of end users and executives involved in the modernization effort. Compared to the other alternatives, this approach maximizes an organization’s chances of completing modernization projects on time and on budget.

In the following section, we provide more details on the various approaches organizations can take when doing in-place application modernization.
For this and several other reasons, making the move from Enscribe to NonStop SQL will be an imperative for many organizations. With NonStop SQL, your organization can begin to leverage open, cross-platform development tools and reduce your IT costs.

To make the move from Enscribe to NonStop SQL, IT teams start by migrating data from legacy Enscribe file structures to ANSI-standard SQL database tables. Luckily, there are tools available that can help automate this one-time effort.

In order to make the database migration transparent to applications, it is vital to intercept the data access requests from applications and redirect them to the new SQL tables. In this way, legacy applications using the Enscribe API can still be used to access data from the SQL database. Also, this means Enform reports and other utilities can continue to be used against the new database as well. This yields optimal investment protection and helps ensure a smooth transition.

Once this migration to the SQL database is complete, your organization can use standard interfaces, such as ODBC and JDBC, to access data from NonStop and other platforms as desired. Perhaps most importantly, your development team will no longer be locked into the few legacy tools created by Tandem back in the 1970s. Instead, they can create new applications using a wide variety of industry-standard tools.

### Security Layer Modernization

To address their security policies and compliance mandates, organizations will increasingly need to leverage robust encryption across all their environments, including on their HP NonStop platforms. Today, it is possible to add encryption into HP NonStop environments by using external encryption modules that applications call via standard APIs. Using an intercept technology approach similar to that outlined in the database modernization layer section above, organizations can transparently introduce encryption, minimizing the impact on associated services and applications.

### Authentication Layer Modernization

Over the years, organizations have sought to bring together disparate user identity databases, and ultimately get to a point where employees can use a single set of credentials to access all of their applications. However, the built-in user database in HP NonStop platforms hasn’t been practical to integrate with standard user databases like Microsoft Active Directory, which is the most prominent alternative in the enterprise space.

By leveraging open standards like Kerberos or LDAP, organizations can begin to integrate HP NonStop platforms with corporate user directories. Through this approach, security teams can centrally and efficiently manage authentication policies, and they also have the option of giving users the convenience of true single-sign-on (SSO) access to HP NonStop-based applications and shells.

### Summary

HP has made huge investments to modernize the HP NonStop platform and it is certainly not legacy any longer—but the applications you have running on HP NonStop might be. In-place modernization provides a way to breathe new life into your legacy applications—and get a fast ROI.

Given the architectural attributes of the HP NonStop platform, there are several areas in which an organization can elect to focus their modernization efforts, including at the user interface, server, database, and security layers. Leveraging almost four decades of experience, comForte offers a unique combination of products and technical expertise in each of these areas:

- **Presentation layer modernization.** Through comForte’s JPath offering, organizations can move from SCOBOL green screens to having convenient, intuitive interfaces to HP NonStop applications.
- **Server layer modernization.** comForte’s Client Server Link (CSL) enables you to use a broad range of interfaces and runtime environments to connect HP NonStop applications with cross-platform services.
- **Database layer modernization.** Escort SQL converts Enscribe files to the NonStop SQL industry-standard relational database, and enables you to make this migration without having to modify your existing applications.
- **Security layer modernization.** Through the SecurData offering, your organization can use tokenization and encryption to update the security defenses that support your HP NonStop environments.
- **Authentication layer modernization.** Through comForte’s SecurSSO offering, organizations can leverage Microsoft Active Directory and other Kerberos-based SSO solutions to provide secure authentication controls governing access to HP NonStop platforms. Many organizations in a range of industries have already leveraged comForte offerings to realize successful modernization initiatives in each of these areas. In addition, HP is also focused on helping customers modernize their NonStop applications. We encourage you to reach out to your HP account team or any of us at comForte to explore optimal approaches for employing application modernization in your specific environment.

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Thomas has been associated with the NonStop community for 20 years. Before joining comForte 5 years ago, he held various management positions at ACI Worldwide both in Germany and the UK. Thomas Gloerfeld can be contacted at t.gloeerfeld@comforte.com.

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Harry co-founded Carr Scott Software in 1996 as a software spin-off company from Tandem Computers with Dr. Richard Carr (formerly a technical director at Tandem). Prior to Carr Scott Software, Harry was employed by Tandem from 1983 to 1996 in a number of positions including business, sales, and support management for the Eastern US. Harry Scott can be contacted at harry.scott@CarrScott.com.

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