PCR-360® Enterprise-level Communications and Technology Management

Integrated versus Independent Operational Support Systems (OSS)

With all of the systems that are available today, what functionalities are needed to operate an IT/Telecom services operation back office? The following list provides a summary of the basic functionality that is required to efficiently operate the back office:

- Account Administration
- Billing
- Provisioning and Order Management
- Service Ordering
- Incidents
- Circuit Administration and Billing
- Telecom Switch Interfaces (VoIP, 5ESS, DMS and/or PBX's depending upon the customers network configuration)
- Equipment Inventory Administration
- Warehouse Control
- Cable and Data Infrastructure Management
- Web Based Customer Self Service Portal

With this many pieces of functionality required to operate the back office, how does one decide which system, or combination of systems, will provide a solution that can support their business? Unfortunately, many companies are selecting systems before they actually decide how they want to run their business. Once the systems have been chosen, the systems tend to dictate business structure and processes. ***Proper implementation of a back office solution dictates that the business strategy is defined and process flows are developed, before system decisions are made***. When it is time to choose the systems, the systems should be chosen on the basis of their fit with the business strategy and process flows of the company. Careful planning is required on the part of the organization to ensure that the correct system requirements are defined and the proper systems are selected for the operation of its business.

When planning a back office strategy, there are two fundamental system strategies to decide between:

- Independent systems for each required functionality
- An integrated system that provides all of the required functionalities in a single platform.

The more traditional approach is to choose independent systems for each area of required functionality. However the cost, implementation time frames and ongoing operating and support costs of multiple systems can dramatically lengthen the interval between start-up and profitability. The decisions made at this point in the planning process have massive impacts on the ongoing cost structure of the company.

If a multiple system solution is used, the following actions must be taken in order to decide upon the products required to deliver the 11 functionalities identified above.

Requirements Definition

For each of the 11 required functionalities, a requirements document must be created to define the capabilities needed in the respective areas. These documents must define:

- Required functionality
- Process flows
- Data management requirements
- Interface requirements to other systems
- Report generation capability requirements
- Management requirements

Vendor Identification and Selection

Once the system requirements are defined, vendors for each functionality must be identified, qualified, their products evaluated, supplying vendors selected and the products and associated services contracted for. The steps involved in this process include:

- Creation of Request for Quotation (RFQ) documents for each required functionality
- Identification of potential vendors for each required functionality
- Vendor qualification
- Bidder's list creation
- Non-disclosure agreements
- RFP release to selected bidders
- RFP response evaluation
- Vendor selection
- Contract negotiation (Including required product enhancements)
- Contract signing

Planning

Once the suite of systems to be used is selected, one must plan how the systems will interact within the processes and data flows that have been designed to operate the business. This additional planning step is required to ensure the following:

- The functionality that was planned for is delivered in the suite of systems that have been selected.
- That process flows remain as planned based upon the selected suite of systems.
- That data flows remain as planned based upon the selected suite of systems.
- That interfaces between the various systems in the suite of systems exist or are included in the contracts that have been signed.
- That test plans are created to properly test the end-to-end operation of the suite of systems.
- That action is taken to correct or work around identified process and data flow disconnects.

Implementation

The implementation phase of the project is where the back office takes shape. This first opportunity to actually see the selected systems in operation enables one to validate the process flows and business assumptions. The implementation phase of the project includes the following activities:

- Site preparation (computer rooms, cabling to work stations, office layouts, etc.)
- Hardware installation
- Software loading
- Data porting from any existing systems to the new systems
- System testing (each individual system must be tested)
- Process flow testing
- Integrated system testing (if electronic interfaces between each system was part of the procurement process)
- End-to-end acceptance testing
- Training of users
- Documentation of end-to-end processes and system interactions
- Development of reporting routines at the system and business unit level
- Development of audit trails to provide integrity checks
- Creation and staffing of a help desk for the users of the system.

Once the actions defined in the Requirements Definition, Vendor Selection and Implementation phases of the project are complete, one is ready attack the market.

In theory, the above is the proper approach in building a functional and efficient back office. However, there are a few fundamental flaws in practice with the steps identified above. These are as follows:

- High first costs (multiple systems and high initial implementation costs)
- High operating and support costs (again, multiple systems and large support staffs required)
- High upgrade costs (as the systems evolve, each system must be upgraded annually to be kept current with the support process of that vendor)
- High administration costs (since there are multiple systems, management reporting requires report generation from each system and then consolidation at the business level)

Data integrity and data management costs are high (since there are multiple systems, each system has its own database). Unless the vendors have fully integrated their systems, data that is common across multiple systems must be entered separately in each database (often in different formats). The cost of duplicate data entry and mismatched data can be enormous.

So what can be done to simplify the implementation of a back office solution? The optimum method of simplifying the back office implementation is by reducing the number of systems required to implement the back office solution. This requires that the one search for ***multi-***

functional systems that provide more than one back office function. For *every* system that is eliminated from the back office solution, the following activities are eliminated:

- Vendor selection
- Implementation planning
- System implementation
- Integration testing

Requirements definition is still an integral part of the process, because the required processes and data flows of the company must be defined in order to implement the back office in the desired manner.

The savings that are generated by the use of multi-functional systems can be quantified as follows:

- Reduced first cost – multi-functional systems generally cost much less than the comparable suite of individual systems required to provide the same functionality.
- Reduced implementation costs – fewer systems mean less implementation effort, fewer people and shorter implementation intervals.
- Reduced support costs – with fewer systems there are smaller IT functions required, fewer functional operating groups (and fewer operations people), fewer annual system upgrades, reduced maintenance costs, fewer hardware platforms to support and fewer points of failure in the back office.
- Increased data integrity – With a smaller number of systems there are fewer data bases to worry about synchronizing data across, and the more accurate the data of a company is, the lower the life cycle cost of the back office is.
- Increased awareness of the total business – Employees that are exposed to multiple areas of the business through multi-functional systems tend to be more aware of the total business and how it operates, which strengthens the organization.

The optimum solution is to be able to provide all of back office functionality in a single system that utilizes a single database. The single system solution eliminates the most challenging and time-consuming aspect of back office implementation: the integration of multiple systems into a cohesive and efficient back office system.

Do these systems exist? The answer is an emphatic YES!

One such system is PCR, Inc.'s PCR-360 Communications and Technology Management System. What are the attributes of PCR-360 that enables it to address all of the functionality of the back office in a single system? In a nutshell, PCR-360 is a service order driven system that utilizes a single database to manage the back office. Because it is a service order driven system, every transaction within the system is based upon a service order. This enables the operators of the system to view the status of every transaction within the system from a single point. With the Oracle or MySQL database, exception reports can be produced at regular intervals to identify overdue, incomplete and pending activities. These are required management tools for the management of most existing back office systems.

But what else can PCR-360 do? Let's compare the capabilities of PCR-360 to the list of back office functionalities identified earlier.

Billing

The PCR-360 Billing function will support the billing of all services in multiple ways. Any data or voice related equipment, service, or asset may be defined using a product catalog. The PCR-360 product catalog includes the ability to define recurring, and/or non-recurring cost for each item (i.e. Labor rates, Technology Infrastructure Fee).

In addition to using product catalog, the PCR-360 can accept bills or transactions from external systems and apply user defined rates or pass-thru vendor provided rates (i.e. disk usage, cellular phone, pagers, video conference services or any other charges).

PCR-360 can become the billing engine for the entire OCIO and be used to apply costs using a FTE (full time equivalent) factor that is applied for real estate, furniture, infrastructure, etc.

Provisioning/Switch Administration

From a provisioning perspective, PCR-360 integrates the switch feature administration. PCR-360 can provision equipment and services, and it can automatically update switch features. Since it is integrated with the switch (Cisco, Aastra Clearspan, DMS-100, SL-100, Meridian 1, Avaya, and 5ESS), inventory management of the switch(s) can be accomplished at the circuit or feature level. PCR-360 also provides interface to E911.

Provisioning includes both voice and data circuits including POTS, CLASS, Centrex, ISDN, PRI, T-1, Frame Relay and packet switching interfaces.

Order Management

Because of PCR-360's service order capabilities, order management is a fundamental capability of the system. The status of every order can be tracked from initiation to completion by use of a single query on the system.

Service Ordering

PCR-360 is a service order driven system. In addition, PCR-360 can support IVR, on-line ordering (shopping cart), or web-based account inquiries.

Incidents

Incident ticketing in PCR-360 is a sub-set of Service Ordering. The incident ticket is used to improve overall "Help Desk" support operations.

So what else does PCR-360 bring to the table that differentiates it from a multiple system solution?

- First, there is the single database for the system. Just think of the management reporting that a business could provide from an Enterprise wide database (a data warehouse that is internal to the system).

- Data entry is only required once (as opposed to multiple times in multiple formats in a multiple system back office implementation). This is important because individual data entry sessions for each of the systems in a multi-system back office implementation are very resource intensive. In addition, multiple inputs of the same data lead to severe data integrity issues across the individual databases.

- Centralization of multiple operations centers can be supported due to the synchronization capabilities provided by PCR-360's database architecture

- The single database solution with audit trails makes resolution of data integrity issue a simple operational process as opposed to the nightmare of resolving data integrity issues across multiple databases. Resolution of data integrity issues is a very, very expensive proposition when multiple data sources must be compared (just ask someone from a company that has been in business for a few years), and the data integrity issue continues with each new input of data.

An additional benefit of the single database is the ability to have a view of the entire Enterprise without compromising operational autonomy.

How costly is bad data integrity? Let's look at one example:

Assume that data entry people are making 200,000 keystrokes per day and they are 99.9% accurate. (One error per 1000 keystrokes).

Also assume that data is being entered into 5 systems (40,000 keystrokes per system). In a five system scenario, the most accurate that data in anyone system can be is 99.9% and the data accuracy across the 5 systems can't be expected to be more that 99.5%. This yields 5 errors per 1000 keystrokes or 1000 errors in this example.

Assume data entry errors are discovered as follows with the associated cost structure:

- 90% of the errors are found in data entry at a cost of $1.00 per error discovered
- 5% of the errors are discovered during operation of the business at a cost of $10.00 per error discovered
- 5% of the errors are discovered during complaints from customers at a cost of $100.00 per error discovered.

The above scenario yields the following costs:

Error Discovery Point	Number of Errors	Cost
Data entry point	900	$ 900
Operations	50	$ 500
With Customers	50	$ 5000
Totals	**1000**	**$ 6400 per Day**

Looking at a single system solution with a single data entry point, 40 errors per day would be expected with the following costs:

Error Discovery Point	Number of Errors	Cost
Data entry point	36	$ 36
Operations	2	$ 20
With Customers	2	$ 200
Totals	**40**	**$ 256**

This yields a savings of over $6000 per day! On an annualized basis, this equates to $1.2 *million* dollars. These savings don't even consider the reduced numbers of data entry people required to support the business.

So, if you were tasked with making the decision regarding your back office solution, which of the following approaches would you take?

- A multi-system implementation that will cost more, consume large numbers of resources, build empires with your organization and take 2 or 3 years to get implemented, or
- An integrated system solution that costs much less than the multi-system solution requires substantially fewer people and can be used *effectively* in 3 to 6 months.

The benefits of a single system implementation over that of a multi-system implementation can't be ignored if one is really serious about having a managed services system available in a short timeframe and operating in a cost efficient manner.