Hierarchy Application Guide

Version 5.1

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Contents

1   Overview

Introduction to Hierarchy

This section provides an introduction to Hierarchy.

About Customer Self-Service and Siebel Tools

Siebel's Self-Service for Communications includes every application that communications service providers need to enable a complete online customer-Self-Service experience at their website. The suite includes software applications for:

- e-Billing and Payment

- Service and Order Management

- Point-of-Sale

- Reporting and Analytics

- Rate Plan Advice

Siebel's Self-Service applications for the telecommunications industry combine Siebel's unrivaled Customer Self-Service and e-Billing software suite with its extensive industry domain expertise. The packaged, out-of-the-box applications are tailored to solve communications service providers' distinct business problems and to meet communications industry-specific process requirements.

Siebel's Self-Service for Communications includes:

Communications Billing Manager

Communication Billing Manager is a complete e-billing application for communications service providers that gives business and consumer customers valuable and convenient access to their communications bills along with the ability to easily make online payments.

Communications Self-Service Manager

Communications Self-Service Manager enables customers of communications service providers to manage every aspect of their service relationship online. From a single convenient interface, customers can easily activate and manage subscriptions, change rate plans and features, and modify subscriber profile settings. Business customers are able to complete these activities for individual employees, as well as company departments and divisions, across their entire organization.

Communication Analytics Manager

Communication Analytics Manager is a reporting solution for business customers that empowers both individual employees and business managers to analyze and understand their communications costs and usage by investigating and identifying trends and patterns across multiple views of their own unique organization.

Rate Plan Advisor

Rate Plan Advisor is a web-based application that recommends the ideal rate plan for communications subscribers in real-time. Individual consumers as well as large businesses can analyze their actual historical voice/mobile/data usage, find the best-fit rate plans, and compare the features offered by those plans. With its intuitive wizard user interface, Rate Plan Advisor quickly guides end-customers or customer service representatives through the entire analysis process. In addition, a service provider's customer care and marketing groups can also use Rate Plan Advisor to identify pre-churn subscribers, simulate new rate plans, and run predictive analytics.

2   Business Processes and Application Logic

What's New in Version 5.1?

Although there have been many major enhancements made to CBA 5.1, many of them are not visible through the UI. The major new components of functionality are described below.

- Versioned Hierarchy Support

  All reports utilize the effective dated hierarchy for the billing period or periods selected in the hierarchy context. This assures that the report values are correctly calculated based on the hierarchy structure at that time.

- Large Hierarchy Handling

  Hierarchies may become very large when there are a large number of accounts, service agreements, or cost centers for a single company. Hierarchies are loaded on level at a time allowing users to expand and drilldown through the tree by loading each subsequent level upon request. Should any one level contain a very large number of elements, the hierarchy will present a page of elements with next and previous controls to manage the long list. These hierarchy element pages may be nested within other hierarchy element pages to allow full drilldown capability.

- Enhanced Internationalization and Localization

  All of the UI screens and report tables have been enhanced to permit multi-language support through the use of resource bundles. These resource bundles will change the text in the UI and table headers to the appropriate strings based on the user's preferred language selection.

- General UI enhancements

  The user interface has been enhanced to improve the consistency with Communications Billing Manager and Communications Self-Service Manager Applications. The user interface has also been enhanced to facilitate internationalization/localization and changes to the branding and identity to match a specific service provider's requirements.

Key Concepts

Hierarchy Basics

Small to Medium Enterprise (SME) and Large Enterprise (LE) B2B customers typically receive multiple invoices from their service provider for the many services that are consumed, budgeted, paid, approved, and managed by different individuals throughout the organization.

Organizations are also very dynamic. Service contracts are added and removed each month and companies often reorganize for any number of reasons. Reports, especially those run against historical data or run as a trending report over several billing periods need to be sensitive to these changes to provide the most accurate reports possible.

In addition, B2B customers have traditionally received unwieldy stacks of printed bills or sent CDs containing the invoice summaries and usage record details which are often very difficult to manage using desktop software applications. Information provided to the customer in this form is also difficult to share or distribute throughout the organization in a timely manner. B2B customers in all verticals, but especially in Telecommunication companies, need to support hundreds of thousands of registered users with N-levels of hierarchy making flexible queries against billions call data records (CDRs) per month.

If an application fails to meet these requirements, it can result in:

- Internal hierarchy management, security and access control mechanisms, and data warehouse services are expensive to maintain

- Inaccuracies in reports and structures may lead to unexpected results inhibiting effective decision support

- Poor end customer user experience negatively impacts retention and new customer acquisition.

Siebel Self-Service develops an online hierarchy module that is seamlessly integrates across the company's billing, payment, analytics, and self service applications optimized for granting user access through a roles based access control security mechanism for managing and understanding the charges and usage information by modeling the complexity and tracking the changes to an organization's business structure and consolidating billing and payment information into an easy-to-use dashboard interface

This section provides a high level overview of hierarchy, defines how it impacts Billing Analytics, and delineates the hierarchy business requirements being fulfilled by Billing Analytics and by other systems (such as the Siebel hierarchy module or an external hierarchy system of record).

Overview

By creating different hierarchies, the user can define multiple views of the information in their invoices, such as by department, location, cost center, or any combination of different groupings the user wishes to assemble. These custom hierarchies are available to Communications Billing Analytics to enable a number of filter, subtotal, drilldown, and report access requirements described later in this document.

Within a named hierarchy, no node can have more than one parent within that named hierarchy. Also, the bottom leaves of the hierarchy must be unique within the hierarchy.

Hierarchy Types

Billing Hierarchies

Billing hierarchies are created automatically at the time the billing data is loaded. For instance, a simple billing hierarchy might include only three levels: company, account and service agreement (a service agreement is usually a contract or phone number in telecommunications). A complex billing hierarchy could contain an unlimited number of hierarchy objects above the account (such as divisions or corporate identifiers) or below the service agreements such as a charge types associated with a phone.
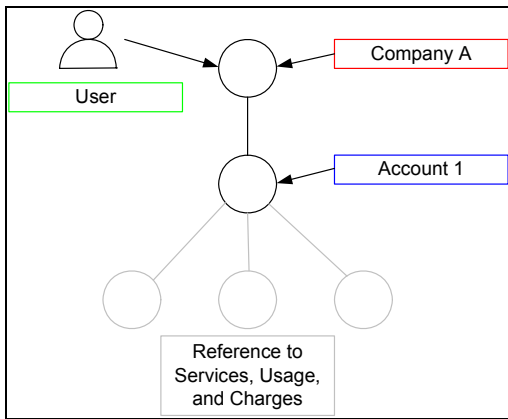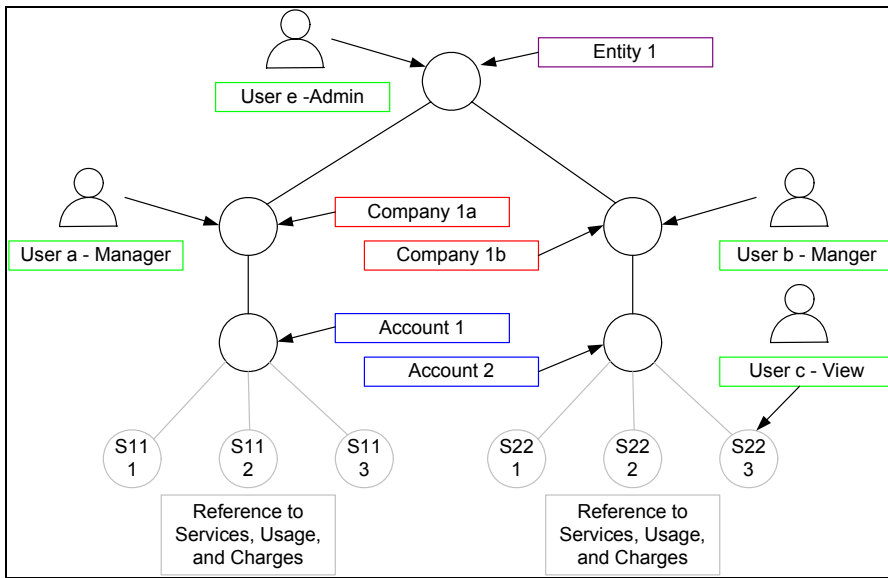

Figure 1 Simple Billing Hierarchy

Figure 2 Typical (Complex) Billing Hierarchy

Business Hierarchies

A user can create an unlimited number of Business Hierarchies in order to organize and view its usage and cost information differently (location, department, cost center, etc.). All bottom nodes of the Organization hierarchy must link to a node in a Billing hierarchy, such as service agreement, in order to contain any meaningful usage or cost information.
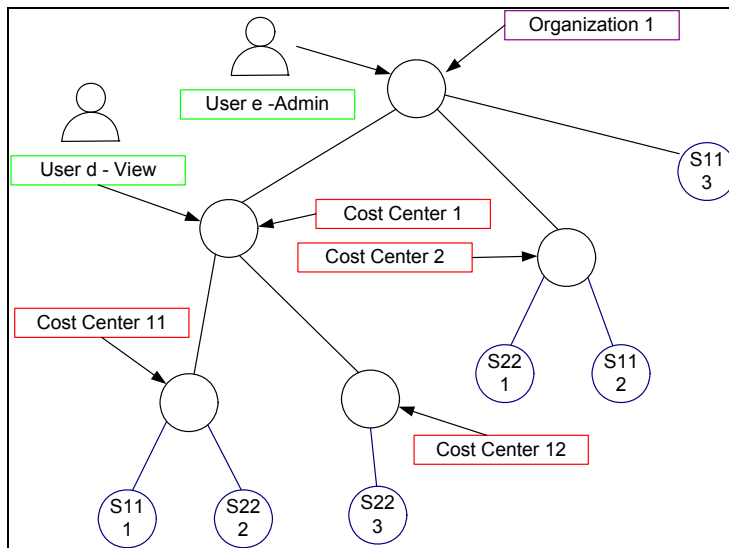
Figure 3 Business (Organizational) Hierarchy

Enabled Functionality

The existence of these hierarchies enables the following Communications Billing Analytics functionality.

- ■ **Report Scope**: The report scope is determined by the current hierarchy context. The context is specified by the Hierarchy Type (Billing or Business), the node within the named hierarchy selected and the reporting period to determine which version of the hierarchy to be reported on.

- ■ **Change Hierarchy Context**: The hierarchy context may be changed by selecting a different hierarchy or different node within a hierarchy, or selecting a different period, or by drilling down through links in the report.

- ■ **Drilldown**: The user can interactively drilldown from a parent node subtotal into the child nodes details. Knowing whether a particular child node level exists in the selected hierarchy dictates whether the drilldown is possible (e.g. a user should not be able to drilldown from a group report to an account report if the selected hierarchy links groups to sub-accounts bypassing the account level).

- ■ **Versioning**: CBA reports that span multiple reporting periods (both trend and non-trend reports) use the hierarchy version which corresponds to the reporting periods selected to accurately represent the totals at that point in time.

■ **Reporting Attributes**: If Communications Billing Analytics reports need to contain attribute values for different nodes within the hierarchy, CBA can include these values. The hierarchy module enables the creation of user defined attributes at different levels in the hierarchy and the creation and maintenance of values for these attributes (such as a budget value to be used in reports that just display exception budget variances.

Hierarchy Actions – Within Communications Billing Analytics

Beyond reporting on the hierarchy data, the Communications Billing Analytics application provides the following hierarchy actions.

■ **Synchronize Hierarchy Data**: Whenever changes are made to any hierarchies, an interface is required to make those same changes within the CBA XAD OLAP (extensible Analytics Data mart) so that the CBA hierarchy data is always synchronized with those external OLTP systems (Siebel or others) that maintain it.

Hierarchy synchronizer maintains coherency between the OLTP and OLAP databases. The OLTP database (transaction processing) is where all of the modifications to hierarchy structures and object attributes are made. The OLAP database (analytics processing) database is where the reports are run based on the current hierarchy context. When changes to the hierarchy structure are made in the hierarchy management screens the data is written to the OLTP database. In the background these changes are updated in the OLAP database. This allows the user to change the hierarchy in one screen and then immediately in real-time see the changes in the analytics reports. The user never sees the synchronizer work but it is a powerful tool to create a seamless and flexible environment.

Note: This same synchronization dependency may exist for any other data required in the XAD that is maintained in another systems (for example, Personal Address Book, Corporate Address Book, User Profile Information, etc.).

Reporting Period versus Billing Period

Since many B2B customers have multiple billing accounts and the billing date is often different for each account the reporting period has been developed to allow the aggregation and reporting across billing accounts within a single reporting period context. In order to explain this statement, a couple terms and concepts need to be described:

Definitions:

Billing Period*:* The interval in which a telecommunications service provider accumulates a specific customer's account usage charges and presents them in an invoice.

Bill Period End Date*:* The last day of the billing period. Typically the day prior to the cycle processing date.

Reporting Period: Defined by telecommunications service provider to be the interval in which cost and usage detail and summary information is accumulated for reporting purposes. The telecommunications service provider may choose any interval, however this is typically specified as calendar months, which is equivalent to the frequency with which the company prepares and send out invoices. The service provider's implementation would need to include the creation of a table (or some mechanism) that defines for each reporting period a name (for example, Jan, Feb, Mar…) a start date and an end date.
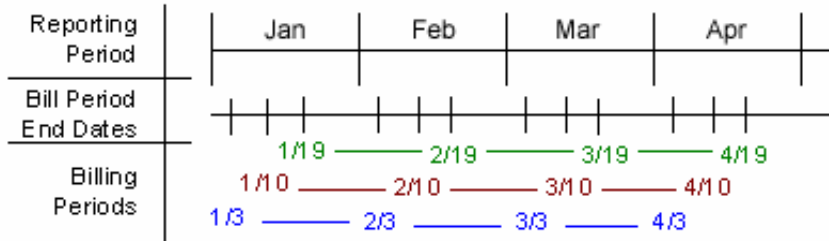
Figure 4 Reporting Period Illustration

Application of Reporting Period

Selection Criteria and Customize: For any report that aggregates Call Detail Record information, the user can change the Period Range "From" and "To" query parameters to modify the scope of records that are returned to the report by selecting each reporting period name and year.

Example: if the user selected January 2005 to March 2005, the system would check the start date of the "From" reporting period and the end date of the "To" reporting period in order to determine which bills would be selected for the report. Only bills in which the Bill Period End Date falls between 1/1/05 and 3/31/05 would be selected to appear on the report. Note that the bill period start date does not impact the records returned to the report.

Rationale: By only querying against the Bill Period End Date, CBA eliminates the complexity of reporting on less than 100% of an invoice and having to prorate invoice level charges since those charges only apply to complete invoice statements. Fixed reporting periods also increases the implementation opportunities to quickly retrieve summary values.

For reports against the Call Detail Records, the applicable "From" / "To" ranges may be explicit calendar dates rather than Reporting Periods (Typically seen in Find Calls Report). *Rationale:* Allows the user the ability to narrow the scope of a report to the specific date range of interest as in searching for a specific charge.

Trend Reports: When charting a trend report the width of each bar (the interval of charted time based subtotals) will be the duration of each reporting period. *Rationale:* Simplicity of presentation and assumed performance improvement if subtotals are always across the same reporting period interval.

Example B2B Multi-Account Customer

Each B2B customer has three accounts and is identified by a color: Purple, Rose, and Orange. These accounts are processed on different cycles: 6, 12, and 18 respectively. The 6th cycle always starts on the 8th of the month, the 12th starts on the 16th, and the 18th starts on the 24th. Billing data is grouped into a reporting period based on the billing period end date. The following table and calendar show three months of billing and maintenance activity.

Account	Billing Cycle	Bill Period Start	Bill Period End	Reporting Period
A	6	8-Jan	7-Feb	February
B	12	16-Jan	15-Feb	February
C	18	24-Jan	23-Feb	February
A	6	8-Feb	7-Mar	March
B	12	16-Feb	15-Mar	March
C	18	24-Feb	23-Mar	March
A	6	8-Mar	7-Apr	April
B	12	16-Mar	15-Apr	April
C	18	24-Mar	23-Apr	April

Table 1 - Billing Cycle Definition and Reporting Period

Each cell in the following calendar shows the date (black number), the customer billing cycle start (cell color and account letter below the date), and the day of the billing cycle for that month (red number) or maintenance (grey M).

Sunday	Monday	Tuesday	Wed	Thursday	Friday	Saturday
26	**27**	28	29	30	31	**1** JAN 1
2 2	**3** 3	**4** 4	**5** 5	**6** M	**7** M	**8** A
9 7	**10** 8	**11** 9	**12** 10	**13** M	**14** M	**15** 11
16 B	**17** 13	**18** 14	**19** 15	**20** M	**21** M	**22** 16
23 17	**24** C 18	**25** 19	**26** 20	**27** M	**28** M	**29** M
30 M	**31** M	**1** FEB 1	**2** 2	**3** 3	**4** 4	**5** 5
6 M	**7** M	**8** A 6	**9** 7	**10** 8	**11** 9	**12** 10
13 M	**14** M	**15** 11	**16** B	**17** 13	**18** 14	**19** 15
20 M	**21** M	**22** 16	**23** 17	**24** C 18	**25** 19	**26** 20
27 M	**28** M	**1** MAR 1	**2** 2	**3** 3	**4** 4	**5** 5
6 M	**7** M	**8** A 6	**9** 7	**10** 8	**11** 9	**12** 10
13 M	**14** M	**15** 11	**16** B	**17** 13	**18** 14	**19** 15
20 M	**21** M	**22** 16	**23** 17	**24** C 18	**25** 19	**26** 20
27 M	**28** M	**29** M	**30** M	**31** M	**1** APR 1	**2** 2
3 3	**4** 4	**5** 5	**6** M	**7** M	**8** A 6	**9** 7
10 8	**11** 9	**12** 10	**13** M	**14** M	**15** 11	**16** B
17 13	**18** 14	**19** 15	**20** M	**21** M	**22** 16	**23** 17

Table 2 - Calendar showing Date, Billing Cycle number, and maintenance days

Application of Reporting Period

Selection Criteria and Customize: For any report that aggregates Call Detail Record information, the user can change the Period Range "From" and "To" query parameters (for example, Dec '03 to Feb '04) to modify the scope of records that are returned to the report by selecting each reporting period name and year.

Example: If the user selects 2003 Dec to 2004 Feb, the system checks the start date of the "From" reporting period and the end date of the "To" reporting period in order to determine which invoice data to select for the report. Only invoice data in which the Bill Period End Date falls between 12/1/03 and 2/29/04 are selected to appear on the report. Note that the bill period start date does not impact the records returned to the report.

Rationale: By only querying against the Bill Period End Date, Communications Billing Analytics eliminates the complexity of reporting on less than 100% of an invoice and having to prorate invoice level charges. Fixed reporting periods also increases the implementation opportunities to quickly retrieve summary values.

Trend Reports: When charting a trend report the width of each bar (the interval of charted time based subtotals) will be the duration of each reporting period.

Versioned Hierarchy

The billing structure is constantly changing due to the addition or removal of services within an account. Business structures often change as a result of shifts in responsibility within an organization. These changes can create inaccuracies that may have been inadvertently introduced into the effective dated hierarchies.

The following complications may arise:

1 When running a report that includes historical billing data, a customer would expect the report to use the hierarchy that was effective at that time.

2 When running a trend report containing the totals from several reporting periods, each reporting period should reflect the charges and the hierarchical structure that was effective at each point in time.

3 Customers expect to see their report results with a minimal amount of latency which creates implementation challenges to achieving this objective.

Which can result in:

1 Customers become confused, spend time reconciling reports to hierarchy changes, and doubt the integrity of the application.

2 Long report result latency resulting in constant batch reporting.

3 All reports must be run as stored online or downloaded to preserve their integrity over time creating a storage and file management burden.

Siebel provides a solution by using versioned Hierarchies that maintain multiple instances of each hierarchy within the system including all billing and non-billing hierarchies. Each instance of the hierarchy corresponds to an effective dated reporting period. Each effective dated hierarchy is a snapshot of the structures in the billing data or a snapshot of organizational structures over time.

Each month's series of bill file loads, import updates, and manual modifications are collected into an effective dated hierarchy for the current month. On the first of each month the current month's hierarchy is stored and a copied for the next month's changes. This provides a hierarchical history on a monthly basis. A user may specify a previous month's hierarchy to make changes to historical effective dated hierarchies. The changes done to past hierarchies are carried forward automatically to maintain consistency. The most recent version of the hierarchy for the current reporting period is used as a default.
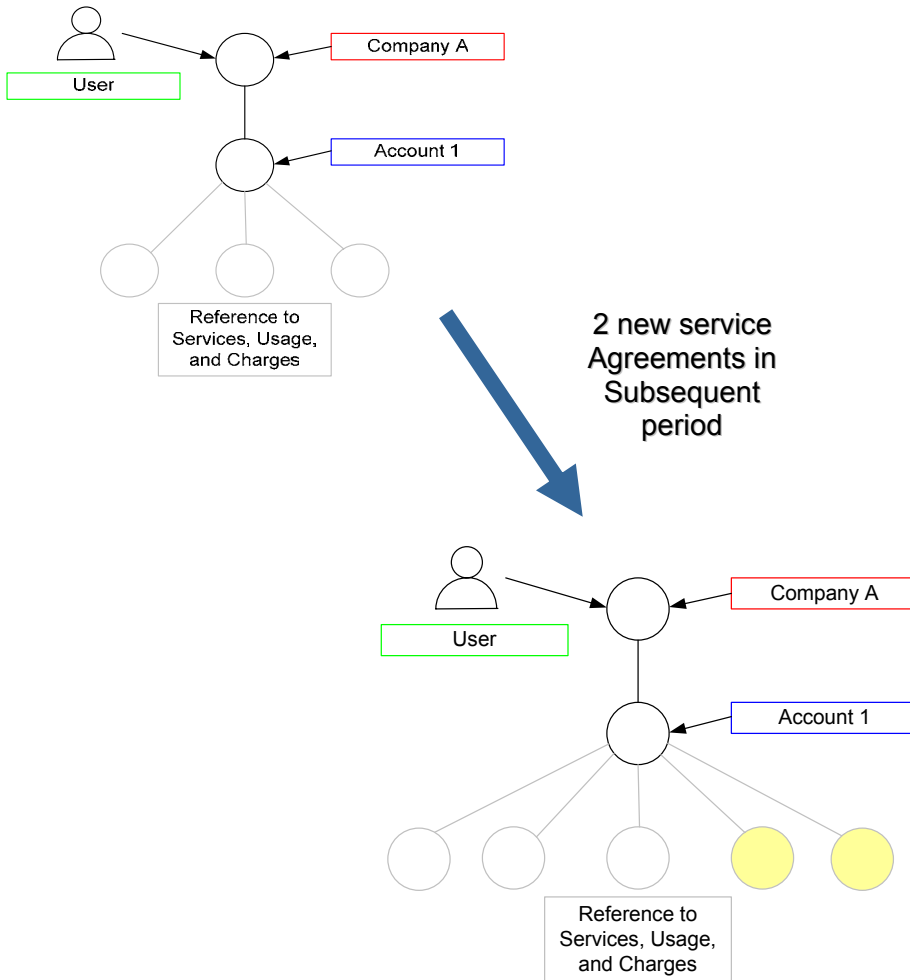
Figure 5 Versioned Hierarchy Illustration

3   Site Web Flows

Hierarchy Use Cases

The use cases in this section show common functionality.

General User Interface

Submit

Name:	Submit
Brief Description:	Describes the navigational experience when a Submit action is selected.
Main Path:	User selects a Submit action. System executes the desired action. System clears any data or selections made by the User. Use Case Ends.
Alternate Paths:	**[A1]** None
Exception Paths:	**[E1] User encounters a system error:** 1. System invokes Error Message use case.
Business Rules:	None

Reset

Name:	**Reset**
Brief Description:	Describes the navigational experience when a Reset action is selected.
Main Path:	**1.** User selects a Reset action. **2.** System clears any data or selections made by the User. **3.** System clears any data or selections made by the User. **4.** Use Case Ends.
Alternate Paths:	**[A1]** None
Exception Paths:	**[E1] User encounters a system error:** 1. System invokes Error Message use case.
Business Rules:	None

Cancel

Name:	**Cancel**
Brief Description:	Describes the navigational experience when a Cancel action is selected.
Main Path:	**1.** User selects a Cancel action. **2.** System returns User to first page of current sequence of pages. **3.** System clears any data or selections made by the User. **4.** Use Case Ends.
Alternate Paths:	**[A1]** None
Exception Paths:	**[E1] User encounters a system error:** 1. System invokes Error Message use case.
Business Rules:	None.

Sort Data in a Table

Name:	Sort data in a table
Brief Description:	User sorts the data in a specific table.
Main Path:	1. User selects a sorting link (a column header that supports sorting). 2. System sorts the data in the table by the selected column in ascending order. 3. User selects the same sorting link. 4. System sorts the data in the table by the selected column in descending order. 5. User selects a different sorting link. 6. System sorts the data in the table by the newly selected column in ascending order. 7. Use Case Ends.
Alternate Paths:	[A1] None
Exception Paths:	[E1] **User encounters a system error:** 1. System invokes Error Message use case.
Business Rules:	[B1] If the data set is large, which causes paging to be enabled, the sort occurs over the entire data set. [B2] When a column on the second page or beyond of a report with multiple pages is sorted, the sorted report returned will always be on the first page, regardless of what page the sorting was invoked on by the user.
Notes:	All tables that display details have ability to sort on column headings.

Change Language

Name:	Change Language
Brief Description:	User selects action to change the language displayed in the UI.
Entry Points	Any page
Main Path:	1. The main path only updates the language in the report template and excludes the text in the tiles around the report template. 2. User selects "Change Language" action 3. System updates the static content of the report template and user interface to the strings for the selected language taken from resource bundles. 4. System resubmits report query request with the new language setting to update table headers and report content with the selected language strings 5. Use Case Ends.
Alternate Paths:	None
Exception Paths:	**[E1] User encounters a system error:** 1. System invokes Error Message use case.
Business Rules:	**[B1]** Change language is available on every page.

General Hierarchy Management

Manage Interface

Name:	Manage Interface
Brief Description:	Describes the user interface for managing hierarchy and behavior of associated actions.
Actors:	CSR, Admin, Manager
Entry Points	1. My Account Tab: Hierarchy Sub-Tab 2. Manage Tab
Form Elements:	Top Pane: Hierarchy Search Criteria If there is no user specified default hierarchy type and hierarchy name, the system uses the first billing hierarchy in the hit list as the default 1. Hierarchy Type [Required: Default: Current Context or user's Default Hierarchy for start of session – if no default is specified then the dropdown is populated with 'Billing'] Dropdown Options: a. Billing [DEFAULT]

	b. Organization
	2. Hierarchy Name [Required: Default: Current Context or user's Default Hierarchy for start of session– if no default is specified then the dropdown is populated with 'Select']
	a. Dropdown populated with hierarchy names stored in the system
	3. Period [Required: Default: Current Context Default: Current Month
	a. Dropdown Options: [monthly, up to 12 periods, configurable for more or fewer periods]
	b. Unpublished is displayed in the period dropdown for unpublished hierarchies.
	4. Element: [Optional: Default: Select] Types of elements that can be assigned to the hierarchy. Dropdown Options:
	a. When Billing Hierarchy Type is selected: Accounts, Services, Users, Company, Group]
	b. When Organization Type is selected: Groups (including optional groups), Services, and Users
	5. Status: [Optional: Default: Select – Required if Element type is specified] Status of elements that can be assigned to the hierarchy. Dropdown Options:
	a. When Groups Element is selected: Assigned only
	b. When Users Element is selected: Assigned, Unassigned, Authorized, and Unauthorized
	c. When Accounts/Services Element are selected: Assigned, Unassigned
	6. Attribute: [Optional: Default: Select] Selections in this dropdown will be repopulated dependent upon what attributes are available to Element chosen. Dropdown Options:
	a. When Element is specified the list of Attributes is updated to display all attributes both standard and custom to be used in filtering the hierarchy search values
	7. Keyword: [Optional: Default: Blank] Freeform text field that enable further filtering of search results. The list is queried with a "starts with" action.
	8. Search Radio buttons: [Default: From Current Location] Specifies the scope of the search, entire hierarchy or from the current position and below.Options:
	a. Entire Hierarchy
	b. From Current Location
	9. Instructional text: "Please select hierarchy criteria"
	<u>Bottom Left Pane</u>
	1. Hierarchy Info
	a. Modified Date: [the date last modified]

<table>
<tr>
<td></td>
<td>

b. Modified By: [the username that made the last modification]

c. Position: [displays current position link focus] Set Position Button.

2. New [Default: Select]

    a. Dropdown Options: [Default: Group]

        i. [OPTIONAL; Cost Center. Others as required by the customer and defined in OMF and defined for use in the current hierarchy type. Each new group type will also be available in the Elements search criteria dropdown list.

<u>Bottom Right Pane: Details Sub-Tab</u>
* All fields are pre-populated with previously stored information.

1. List of Attributes and values that correspond to the selected link target object. The attributes contain both default and custom fields.

2. The Attribute Labels included in the list contain both standard and custom attributes

    a. If the labels for the attributes are fixed then the default attribute label will be 'Custom 1', 'Custom 2', etc.

    b. If the labels are customizable then the customer specified label will be displayed in place of the default labels.

3. Attribute values may be displayed as [The editing method is configurable on an individual link target object and attribute level]:

    a. Text – the value is fixed and may not be changed by the user

    b. Text entry box – the value may be changed by the user by erasing and entering a new value or editing the current value. Submit action writes the changes to the database.

    c. Dropdown list – the value may only contain predefined values that are displayed as a dropdown list

<u>Bottom Right Pane: Elements Sub-Tab</u>

1. Checkbox [header row]
Selects all rows

2. Checkbox [row value]
Selects the individual row

3. Results [number]
Number of search results returned

<u>Bottom Right Pane: Move Sub-Tab</u>

1. Checkbox [node]
Selects all rows

2. Checkbox [child branch]
Selects all the nodes from that node to the bottom the individual branch

</td>
</tr>
<tr>
<td>**Report Content:**</td>
<td>

<u>Results Fields Element Sub-tab</u>

1. Name (Display name of element type)

2. Position (The name of the hierarchy node one level above)

</td>
</tr>
</table>

Main Path:	1. User selects Manage tab.
	2. System returns a page displaying:
	a. Top Pane: current context or defaults.
	b. Bottom Left Pane: Graphical view of current hierarchy tree opened to current position context if applicable and expanded to show one level below the current position. Otherwise blank with a message prompting the user to specify a hierarchy and select Submit action to display a hierarchy
	c. Bottom Right Pane: Details tab containing the node details for current hierarchy context. Otherwise blank with a message prompting the user to specify a hierarchy and select the Submit action to display details
	3. User specifies search criteria and selects the Submit action.
	4. System checks to make sure that the required fields are specified as a search parameter.
	5. System validation passes.
	6. System determines query parameters based upon the specified hierarchy search criteria and redisplays page as follows:
	a. Top Pane: context updated by specified search criteria.
	b. Bottom Left Pane: Graphical view of current hierarchy tree opened to current position context.
	c. Bottom Right Pane: Elements tab containing the fields for specified element and status with the total count for the search result set. (For field information, see Report Content section of this use case.)
	7. Use Case Ends.

Alternate Paths:	**[A1]** User enters search parameters for Attribute, and/or Keyword and selects the Submit action to refine search criteria and filter down the results:
	1. System searches the hierarchy tree returning a list of all nodes in the Elements sub-tab on the lower right pane that matches the search criteria showing the fields for specified element and status.
	[A2] User selects link of the display name in the Elements sub-tab:
	1. System returns the user to the Details sub-tab displaying attributes and values for the selected link target or user.
	[A3] User selects link of a position in the Elements sub-tab:
	1. System highlights the position of the selected item in the graphical view of the hierarchy and sets the node as the current hierarchy focus. If the position is Unassigned and the Display Unassigned in Hierarchy checkbox is not checked, the "Unassigned" position is not linkable.
	[A4] User expands and collapses the hierarchy branch by selecting on the arrow in the graphical view of the current hierarchy:
	1. System invokes **Collapse and Expand Hierarchy** use case.
	[A5] User selects New Group and the Submit action:
	1. System invokes **Create Group** use case.
	[A6] User selects Details sub tab:
	1. System returns the user to the Details sub-tab displaying attributes for the link target or user that is the current hierarchy focus
	[A7] User selects Delete or Remove action in the Details or Element sub-tabs:
	1. System invokes **Remove Element** use case.
	[A8] User modifies attributes in the Details sub-tab:
	1. System invokes **Modify Element Attributes** use case.
	[A9] User selects Add action in the Element sub -tab:
	1. System invokes **Add Element** use case.
	[A10] User selects column header links in the Element sub-tab:
	1. System invokes **Sorting** use case.
	[A11] User selects Move sub-tab:
	1. System invokes **Move Group** use case.
	[A12] User selects Reset action:
	1. System invokes **Reset** use case.
Exception Paths:	**[E1] User encounters a validation error:**
	1. System invokes Validation Error Message use case.
	[E2] User encounters a system error:
	1. System invokes Error Message use case.

Business Rules:	**[B1]** General
	    1. The current Position including the Hierarchy Type, Hierarchy Name, Period, and Position are carried throughout the session and is accessible by other applications after the user selects the set position action. The Position is automatically updated each time a new position is selected by the user.
	
	[B2] Hierarchy Access Control: Users can only view hierarchies to which they have been assigned and positions at or below the positions to which they have been assigned. User can not view hierarchy nodes to which they have not been granted view access privileges
	    1. Any unassigned users, accounts, and services are displayed as if they are assigned to a group called "Unassigned" linked to the root node of the hierarchy. Unassigned Users do not get displayed as linked into the "Unassigned" folder.
	    2. If user enters the Manage Tab with the hierarchy as the current position, the graphical view of the hierarchy contains the hierarchy as the top node and its nodes one level below it.
	
	Bottom Left Pane: Graphical View of Hierarchy
	
	[B3] If the hierarchy is modified, the fields "Last Modified" and "Modified By" are updated.
	
	[B4] If a position is selected, the position is highlighted and set to the current hierarchy focus for actions. The bottom right pane is updated to show that element's details
	
	[B5] If the expand or collapse icon is selected, the position is highlighted and set to the current hierarchy focus and the group expands or collapses opposite action to the status when selected
	
	[B6] If a node is empty, there will be no expand or collapse arrow next to the node.
	
	Bottom Right Pane: Details/Element/Move Sub-Tabs
	
	[B7] If user selects the checkbox in the row of the column headers of the search results, all items of the search results become selected.
	
	[B8] If user selects the checkbox next to a node in the Move sub-tab, all elements below it are selected.
	
	[B9] If Element is unassigned, it can be added to the hierarchy. If element is assigned, it can be removed from the hierarchy.
	
	If Element is a Group type [created using the create function in hierarchy] the Delete action is available. For all other elements, Remove action is available since billing elements may not be deleted from the system only removed from the current organizational hierarchy.
	
	[B10] If text field box exists (or a dropdown presented), the attribute is editable otherwise the field is fixed and can only be update through billing data or attribute data load files.
	
	Results field for the search criteria specified is updated according to action performed.

Notes:	A Cost Center, Location, and Region are optional link-target types similar to the default Group element.

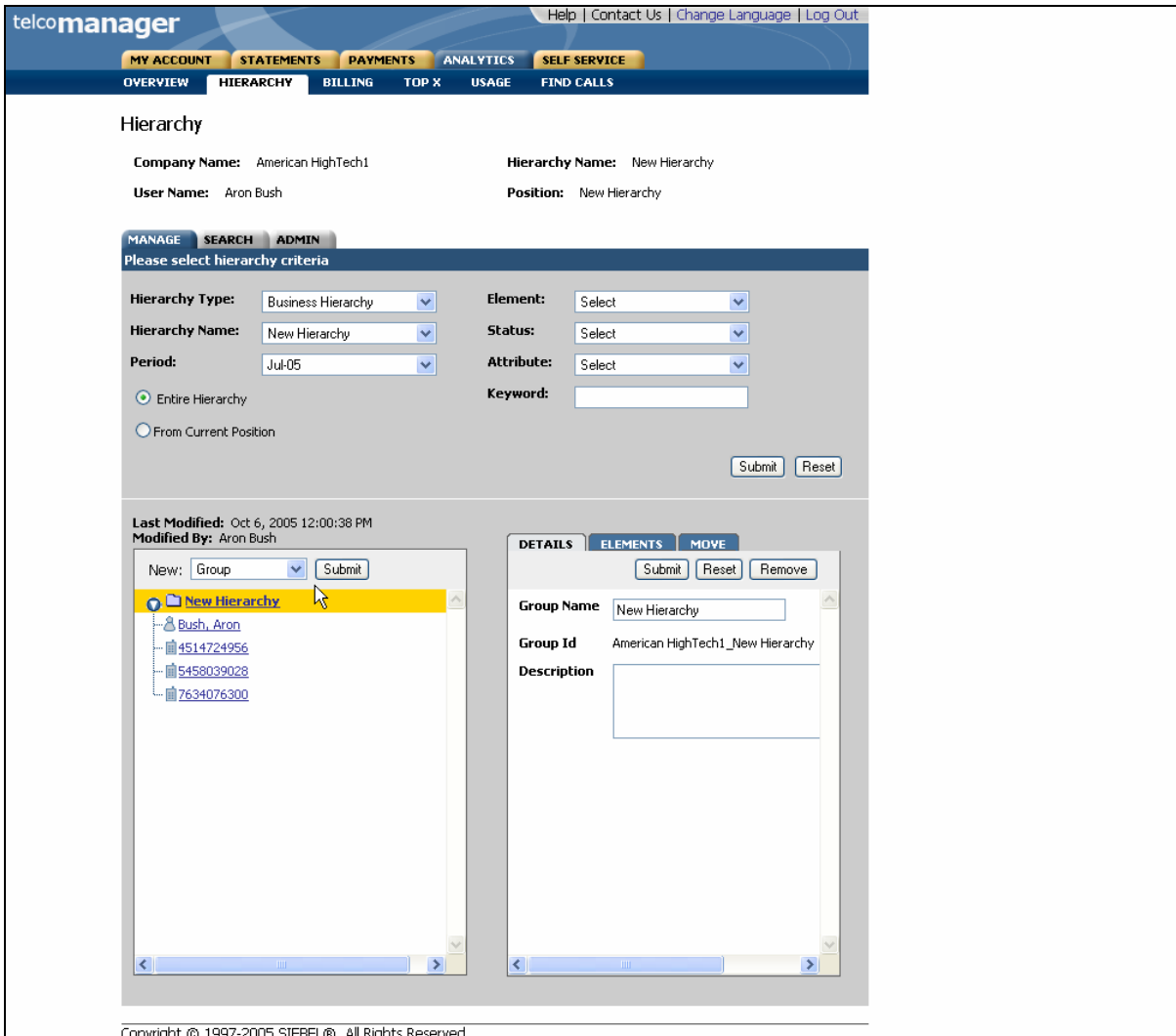Figure 6 – Manage UI Step 1: Specify Hierarchy Search Parameters
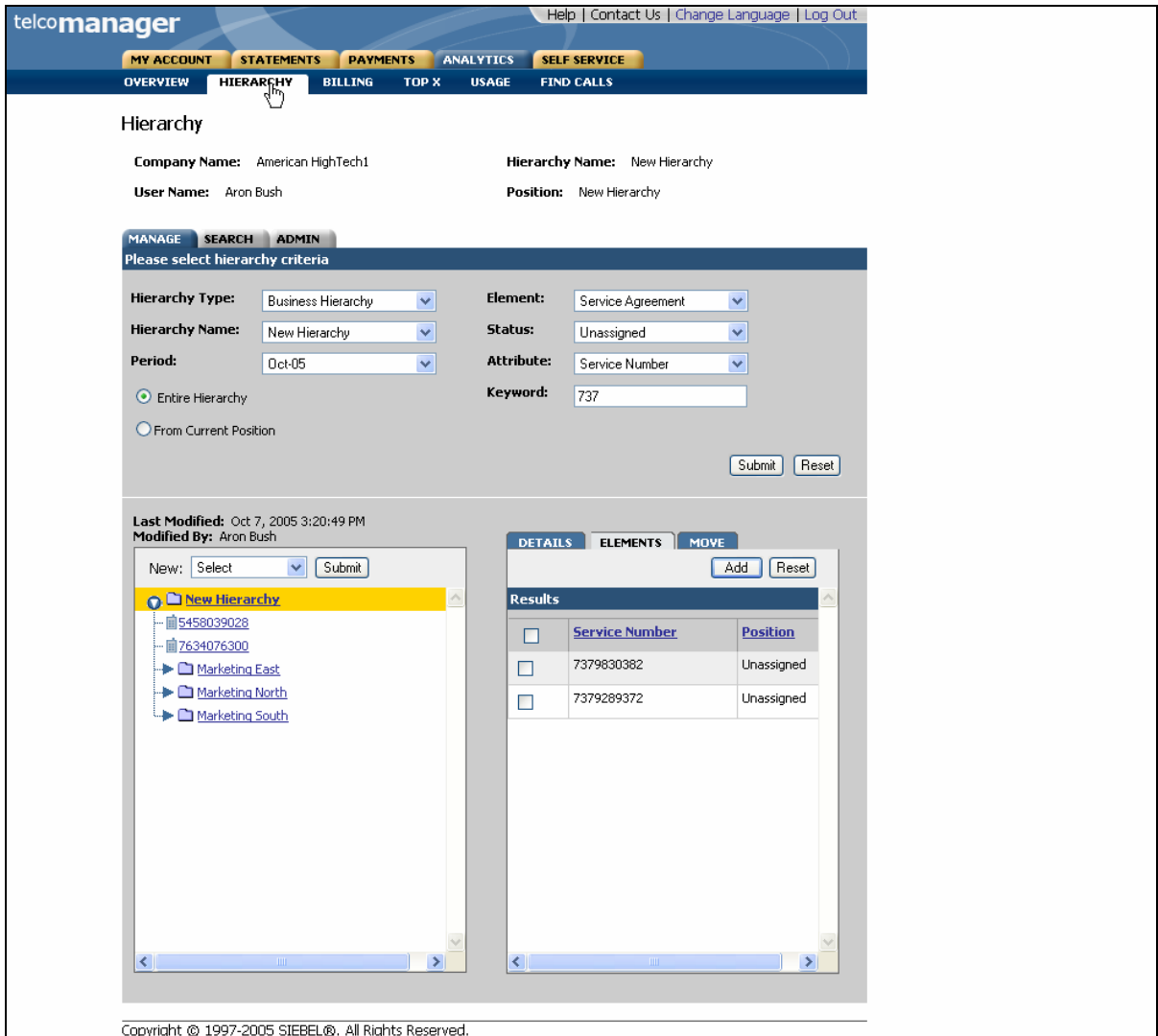
Figure 7– Manage UI Step 2: Specify Filters

Create Group

Name:	Create Group
Brief Description:	Describes the mechanism whereby Groups are created.
Actors:	CSR, Admin, Manager
Entry Points	1. Manage Tab
Form Elements:	**Hierarchy Search Criteria** If there is no user specified default hierarchy type and hierarchy name, the system uses the first billing hierarchy in the hit list as the default 1. Hierarchy Type 2. Hierarchy Name 3. Period 4. Element 5. Status 6. Attribute 7. Filter [future] 8. Keyword 9. Radio buttons: entire hierarchy or only the current position down. 10. Instructional text: "Please select hierarchy criteria" *For more information regarding fields and their defaults, refer to Manage User Interface Use Case. **Create New Group** 1. Name [Required] 2. Description [Optional]

Main Path:	1. User selects New Group and submits action.
	2. System page displaying:
	    a. Top Pane: Hierarchy Search Criteria Form with current search criteria context.
	    b. Bottom Left Pane: Graphical view of current hierarchy as the top node.
	    c. Bottom Right Pane: Details sub-tab with the Create New Group Form.
	3. User inputs data to create the group and selects the Submit action. The group id has to be unique.
	4. System validation passes.
	5. System redisplays the page as follows:
	    a. Top Pane: Hierarchy Search Criteria Form with current search criteria context.

<table>
<tr>
<td></td>
<td>
b. Bottom Left Pane: Graphical view of the current hierarchy with the new Group created as a node under the hierarchy.

c. Bottom Right Pane: Details sub-tab with the attributes for the newly created Group.

6. Use case ends.
</td>
</tr>
<tr>
<td>**Alternate Paths:**</td>
<td>
[A1] User modifies Group details in the Details sub-tab and selects the Submit action:

   1. System invokes **Modify Element Attributes** use case.

[A2] User selects Reset action:

   1. System invokes **Reset** use case.

[A3] User specifies a search criteria before performing the Submit action for the creation of the new group:

   1. System returns the result for the specified search criteria.:
</td>
</tr>
<tr>
<td>**Exception Paths:**</td>
<td>
[E1] **User encounters a validation error:**

   1. System invokes Validation Error Message use case.

[E2] **User encounters a system error:**

   1. System invokes Error Message use case.

[E3] **User selects Cancel action:**

   1. System invokes Cancel use case.
</td>
</tr>
<tr>
<td>**Business Rules:**</td>
<td>None</td>
</tr>
<tr>
<td>**Notes:**</td>
<td>A Cost Center, Location, and Region are optional link-target types similar to the default Group element.</td>
</tr>
<tr>
<td>**Questions:**</td>
<td>None</td>
</tr>
</table>

Figure 8– Create Group Step 1: Select New Group

Figure 9– Create Group Step 2: Specify Parameters
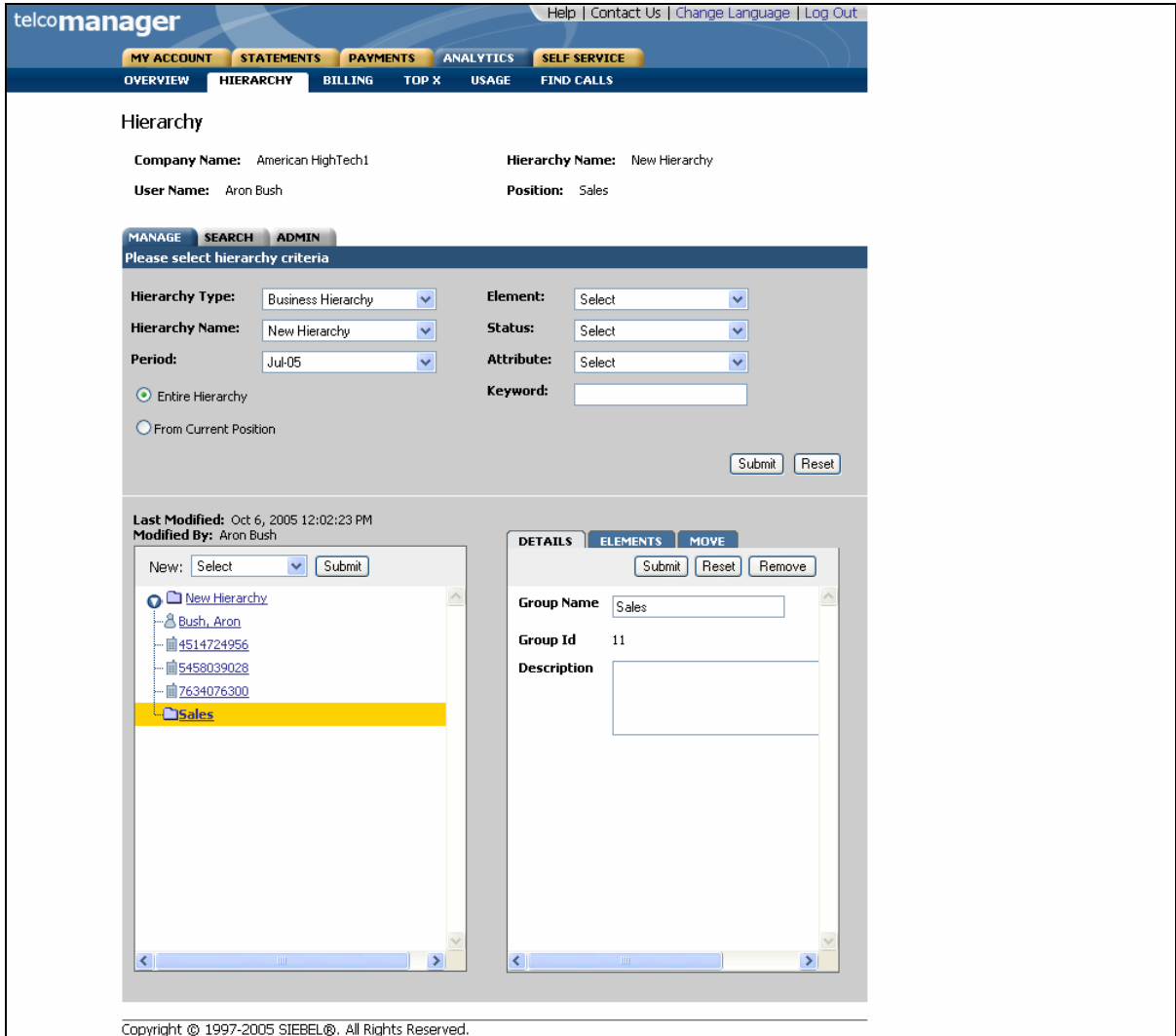
Figure 10– Create Group Step 3: Group Created

Add Element

Name:	**Add Element**
Brief Description:	Describes the mechanism of adding users, accounts, and services.
Actors:	Admin, CSR, Manager
Entry Points	Manage Tab: Element Sub-Tab
Form Elements:	Hierarchy Search Criteria If there is no user specified default hierarchy type and hierarchy name, the system uses the first billing hierarchy in the hit list as the default 1. Hierarchy Type 2. Hierarchy Name 3. Period 4. Element Types of elements that can be assigned to the hierarchy. Dropdown Options: [[When Billing Hierarchy Type is selected: Users] [When Organization Type is selected: Users and Services] 5. Status Status of elements that can be assigned to the hierarchy. Dropdown Options: [When Users Element is selected: Assigned, Unassigned, All] [When Accounts/Services Element are selected: Assigned, Unassigned] 6. Attribute 7. Keyword 8. Radio buttons: entire hierarchy or only the current position down. 9. Instructional text: "Please select hierarchy criteria" *For more information regarding fields and their defaults, refer to Manage User Interface Use Case. Bottom Right Pane: Elements Sub-Tab 1. Checkbox [header row] Selects all rows 2. Checkbox [row value] Selects the individual row 3. Results [number] Number of search results returned
Report Content:	Results For Element Sub-tab 1. Name (Display name of element type) 2. Position (The name of the hierarchy node one level above)
Main Path:	1. User navigates to the position in the hierarchy where the desired object is to be added to specify the focus for the action 2. User specifies a type of Element [A1]

	3. User selects the "Unassigned" status in the Hierarchy Search Criteria
	4. User selects Submit action.
	5. System returns a list of Elements that are not assigned to any node within the current hierarchy in the Element sub-tab displaying the Name and Position in hierarchy.
	6. User selects the checkbox or checkboxes next to desired item or items to be added to the hierarchy.
	7. User selects Add action
	8. System adds selected element to the hierarchy below the current focus.
	9. System redisplays page showing:
	a. Top Pane: Hierarchy Search Criteria Form with current search criteria context.
	b. Bottom Left Pane: Graphical view of the current hierarchy with the new elements added to the hierarchy.
	c. Bottom Right Pane: Updated list of elements with the Elements added to the hierarchy removed from the list in the Element sub-tab and Number of Results field updated
	10. Use case ends.
Alternate Paths:	

Exception Paths:	**[E1] The number of results exceeds a threshold amount for the number of rows in the Elements window [Default = 1000]**
	  1. System displays an error message "too many results – refine the search criteria and select submit to filter the list"
	
	[E2] User encounters a validation error:
	  1. System invokes Validation Error Message use case.
	
	[E3] User encounters a system error:
	  1. System invokes Error Message use case.

Business Rules:	The Add action assigns Elements into the current version of the hierarchy specified by the Hierarchy Period only **[B1]** User can only add Users when a Billing Hierarchy Type is selected. **[B2]** User can only add Users and Service Agreements when an Organization Hierarchy Type is selected. **[B3]** User can only add Users and Companies when a Consolidation Hierarchy Type is selected. **[B4]** Companies, Accounts and Service agreements can only be added to the same hierarchy once. **[B5]** Users can be added to multiple locations within the same hierarchy and can only be added to the same node once. **[B6]** Element Display Name links to Details sub tab for the view. **[E1]** Element Position in hierarchy link highlights the position in the graphical view of the hierarchy and sets the current focus.

	[B7] When elements are assigned to the hierarchy, the fields "Last Modified" and "Modified By" are updated.
	[B8] The only option when Groups element is selected in the Hierarchy Search Criteria is "Assigned". Groups are never unassigned.
	[B9] If user selects the radio button for "Entire Hierarchy", the scope of the search is all the nodes in the hierarchy.
	[B10] If user selects the radio button for "From Current Position", the scope of the search is relative to and limited by the nodes below the current position.
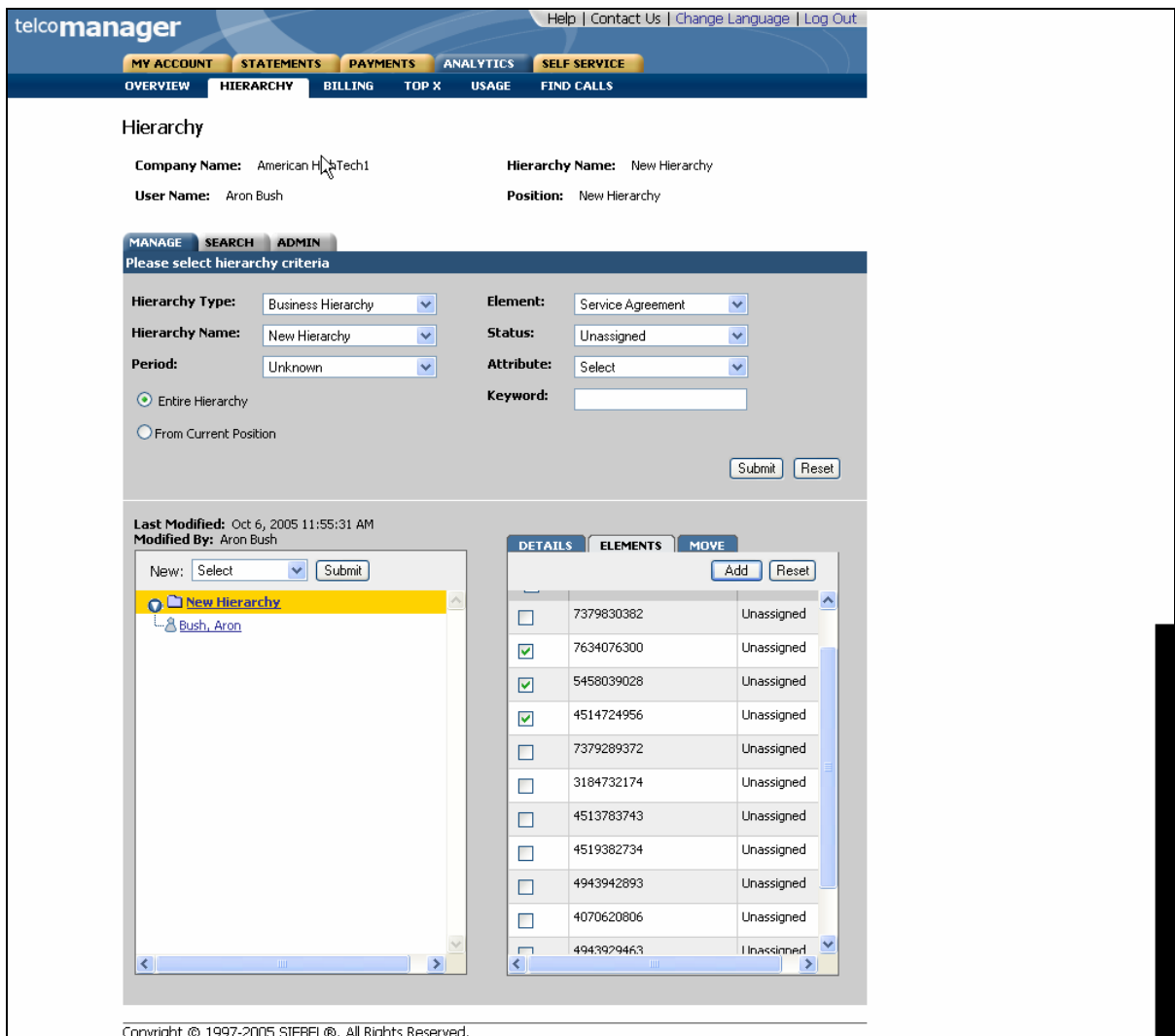
Figure 11– Add [Services] Element Step 1: Select Items to Add

Figure 12– Add [Services] Element Step 2: Added Services
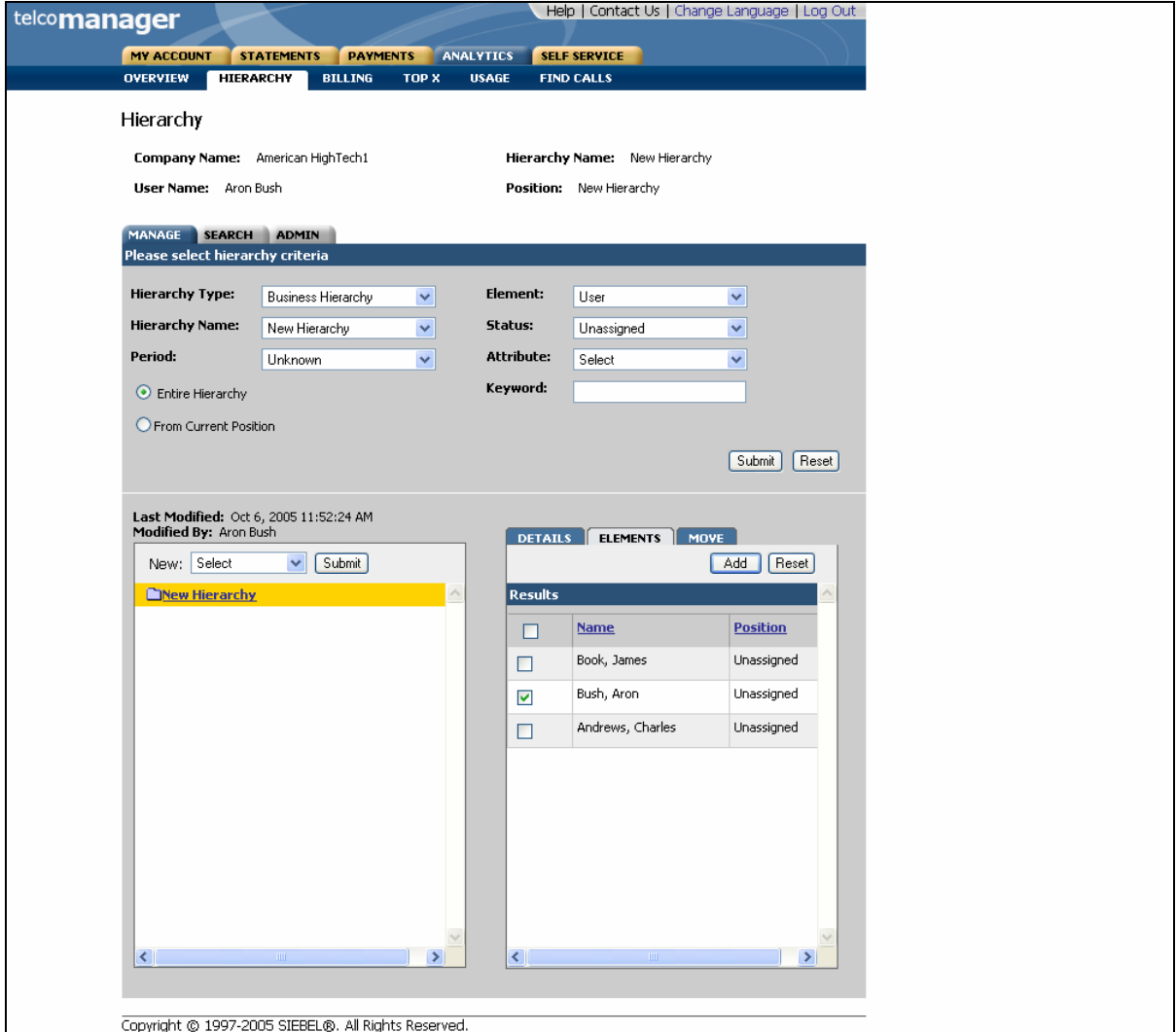
Figure 13– Add [Unassigned Users] Elements Step 1: Select Items to Add
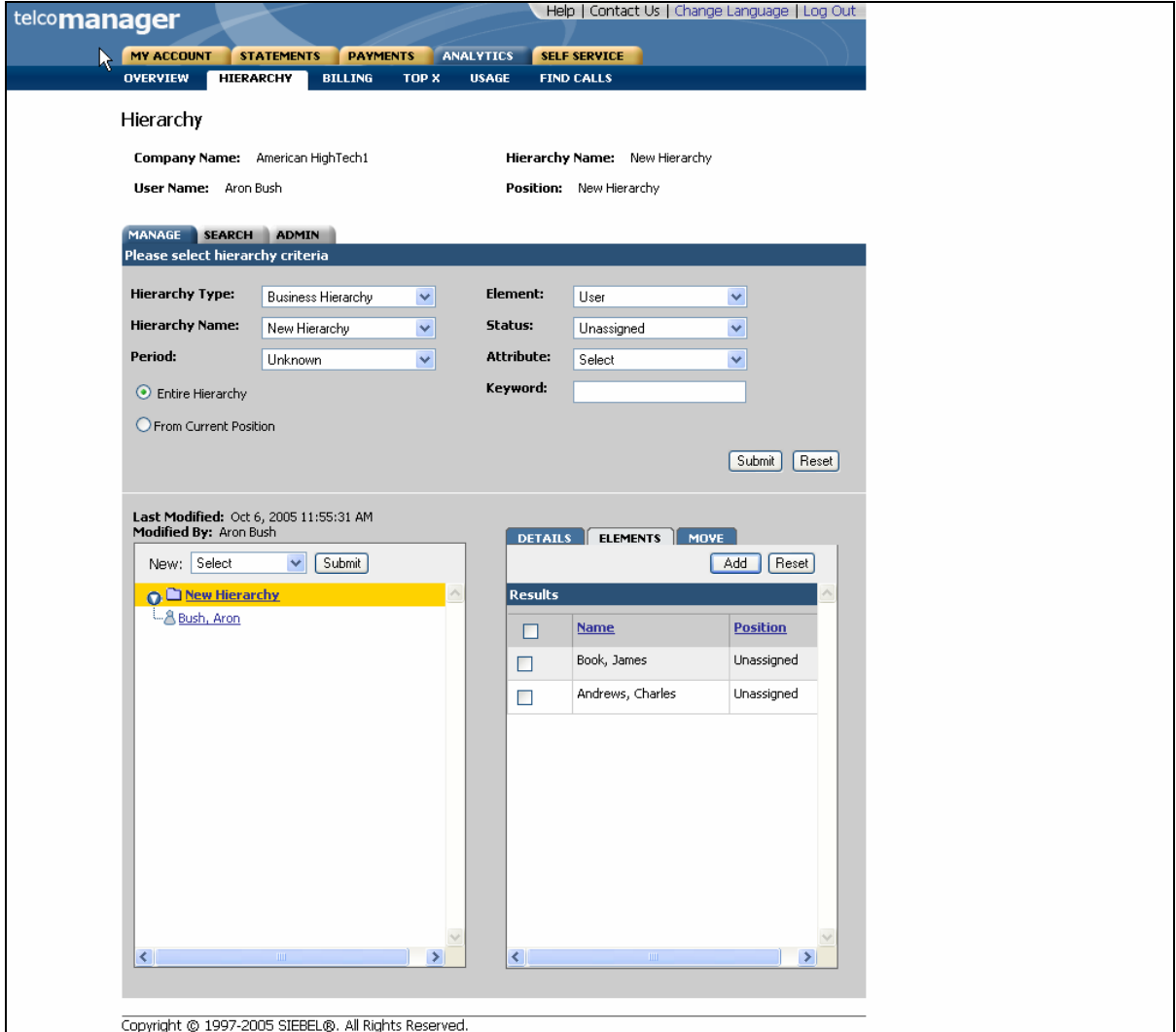
Figure 14– Add [Unassigned Users] Element Step 2: Added Unassigned Users

Remove (Delete) Element

Name:	**Remove or Delete Element**
Brief Description:	Describes the mechanism of removing users, accounts, and services or deleting groups.
Actors:	Admin, CSR, Manager
Entry Points	1. Manage Tab: Element Sub-Tab 2. Manage Tab: Details Sub-Tab
Form Elements:	Hierarchy Search Criteria If there is no user specified default hierarchy type and hierarchy name, the system uses the first billing hierarchy in the hit list as the default 1. Hierarchy Type 2. Hierarchy Name 3. Period 4. Element Types of elements that can be assigned to the hierarchy. Dropdown Options: [[When Billing Hierarchy Type is selected: Users] [When Organization Type is selected: Users and Services] [When Consolidation Type is selected: Groups, Users and Accounts] 5. Status Status of elements that can be assigned to the hierarchy. Dropdown Options: [When Groups Element is selected: Assigned] [When Users Element is selected: Assigned, Unassigned, Authorized, and Unauthorized [When Accounts/Services Element are selected: Assigned, Unassigned] 6. Attribute 7. Keyword 8. Radio buttons: entire hierarchy or only the current position down. 9. Instructional text: "Please select hierarchy criteria" *For more information regarding fields and their defaults, refer to Manage User Interface Use Case. Bottom Right Pane: Elements Sub-Tab 1. Checkbox [header row] Selects all rows 2. Checkbox [row value] Selects the individual row 3. Results [number] Number of search results returned
Report Content:	Results Fields For Element Groups Element Sub-tab 1. Name (Display name of element type Groups) 2. Position (The name of the hierarchy node one level above)

	<u>Results Fields For Element Accounts Element Sub-tab</u> Account No. (Display name of element type Accounts) **1.** Position (The name of the hierarchy node one level above) <u>Results Fields For Element Services Element Sub-tab</u> **1.** Number (Display name of element type Services) **2.** Position (The name of the hierarchy node one level above) <u>Results Fields For Element Users in Element Sub-tab</u> **1.** Name (Display name of element type User) **2.** Position (The name of the hierarchy node one level above)

Main Path:	**1.** User specifies a type of Element and "Assigned" status in the Hierarchy Search Criteria and selects Submit action.
	
	2. System returns Element sub-tab displaying:
	
	   a. Top Pane: Hierarchy Search Criteria Form with current search criteria context.
	
	   b. Bottom Left Pane: Graphical view of the current hierarchy and position.
	
	   c. Bottom Right Pane: the Display Name and Position in hierarchy for the specified Element type and "Assigned" status.
	
	3. User selects the checkbox next to desired item to be removed from the hierarchy and selects Remove action.
	
	4. System displays the following confirmation message on the right pane:
	
	   a. For all element types except Group: "Performing this operation will permanently remove the item(s)from this location in the hierarchy. The item(s) will be unassigned. Do you want to continue?"
	
	   b. For Group element: "Performing this operation will permanently delete the group(s) and cannot be reversed. Items contained within the group will be unassigned. Do you want to continue?"
	
	   c. User clicks submit
	
	5. System redisplays page showing:
	
	   a. Top Pane: Hierarchy Search Criteria Form with current search criteria context.
	
	   b. Bottom Left Pane: Graphical view of the current hierarchy with the elements removed from the hierarchy. After removal, the next element below is highlighted. If the element removed is the last one, the highlight jumps up to the next element.
	
	   c. Bottom Right Pane: Updated list of elements with removed or deleted elements removed from the list in the Element sub-tab and Results field updated as elements are removed from the list.
	
	6. Use case ends.

Alternate Paths:	None.
Exception Paths:	**[E2] User encounters a validation error:** 1. System invokes <u>Validation Error Message</u> use case.

	[E3] User encounters a system error: 1. System invokes <u>Error Message</u> use case.
Business Rules:	**[B1]** The Remove action and the Delete action applies to Elements in the current version of the hierarchy specified by the Hierarchy Period only **[B2]** Users assigned to removed group(s) are unassigned from group and will still appear elsewhere if assigned and will not be unassigned from accounts or services contained in the group. **[B3]** Accounts that are unassigned from a removed group are moved to unassigned status but maintain any user settings. **[B4]** Services that are unassigned from a removed group are moved to unassigned status but maintain any user settings. **[B5]** Element Display Name links to Details sub tab for the view. Position in hierarchy highlights the position in the graphical view of the hierarchy. **[B6]** Element dropdown toggles between the choices user (Billing) OR user and services (Organization) OR user and accounts (Consolidation) depending upon type of hierarchy selected. **[B7]** When elements are unassigned from the hierarchy, the fields "Last Modified" and "Modified By" are updated. **[B8]** If user selects the checkbox in the row of the column headers of the search results, all items of the search results become selected. **[B9]** Results field for the search criteria specified is updated according to action performed. **[B10]** The only option when Groups element is selected in the Hierarchy Search Criteria is "Assigned". Groups are never unassigned. **[B11]** If user selects the radio button for "Entire Hierarchy", the scope of the search is all the nodes in the hierarchy. **[B12]** If user selects the radio button for "From Current Position", the scope of the search is relative to and limited by the nodes below the current position.
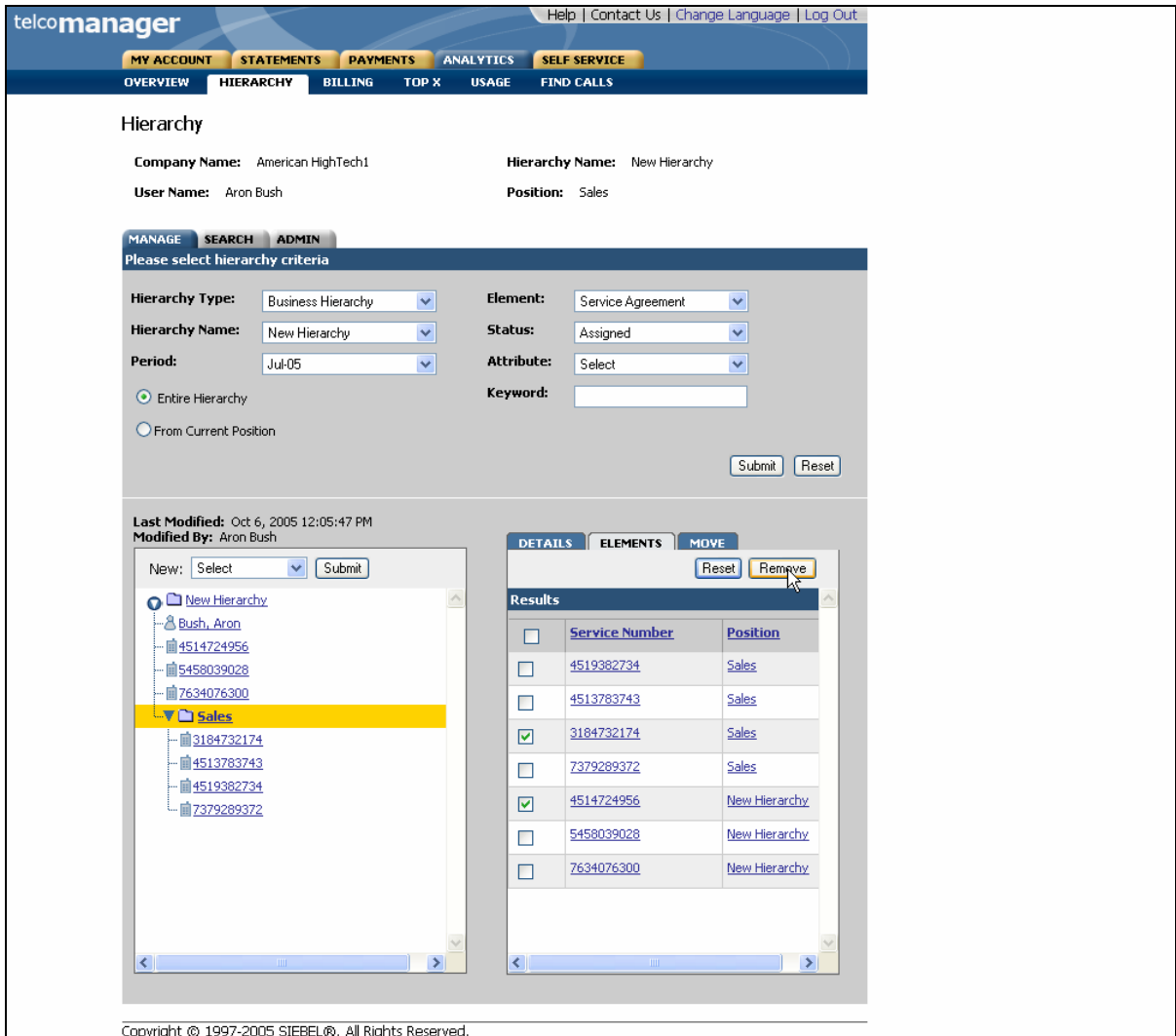
Figure 15– Remove (Services) Element Step 2: Remove Confirm Page
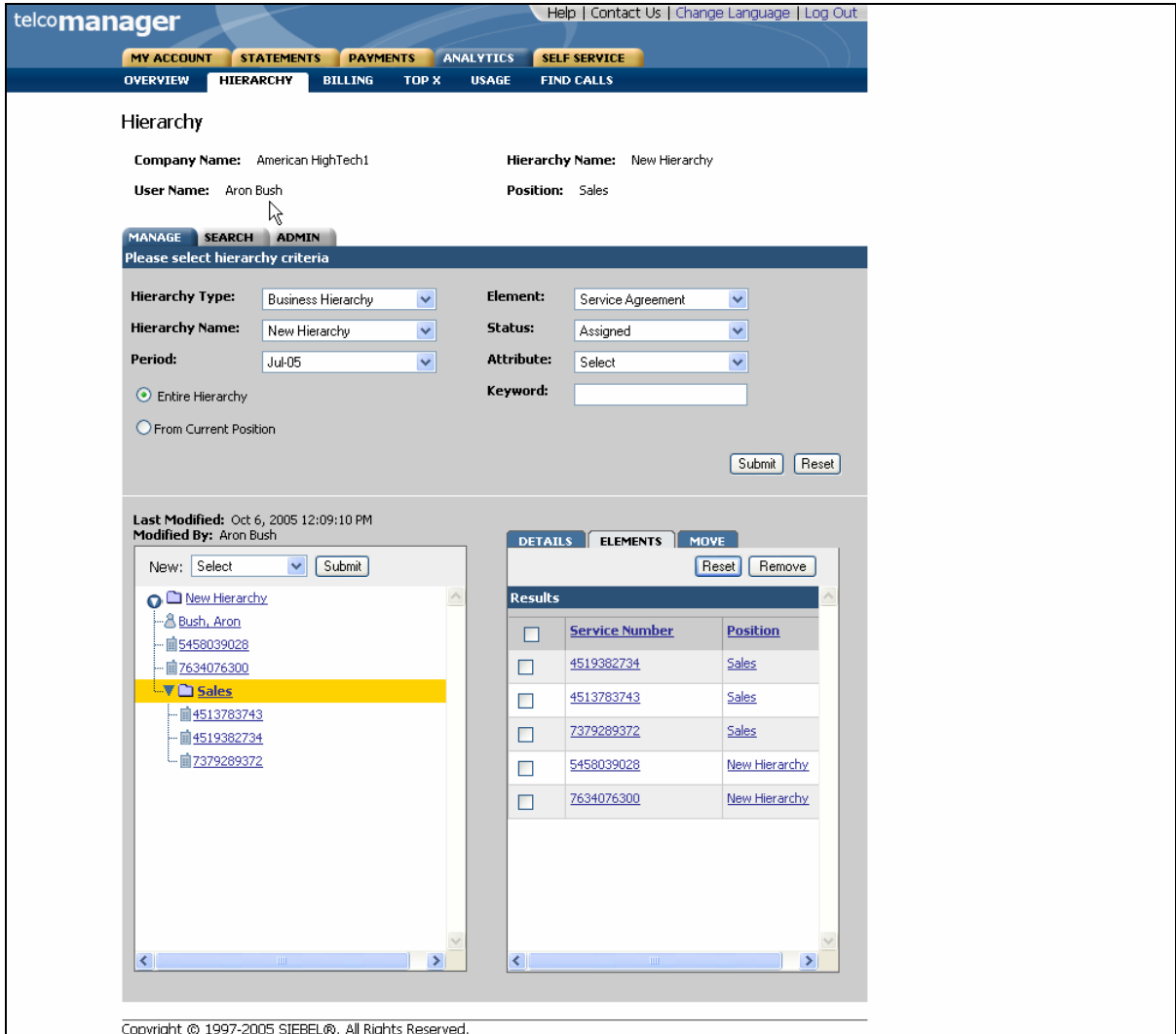
Figure 16 – Remove (Services) Element Step 3: Remove Success
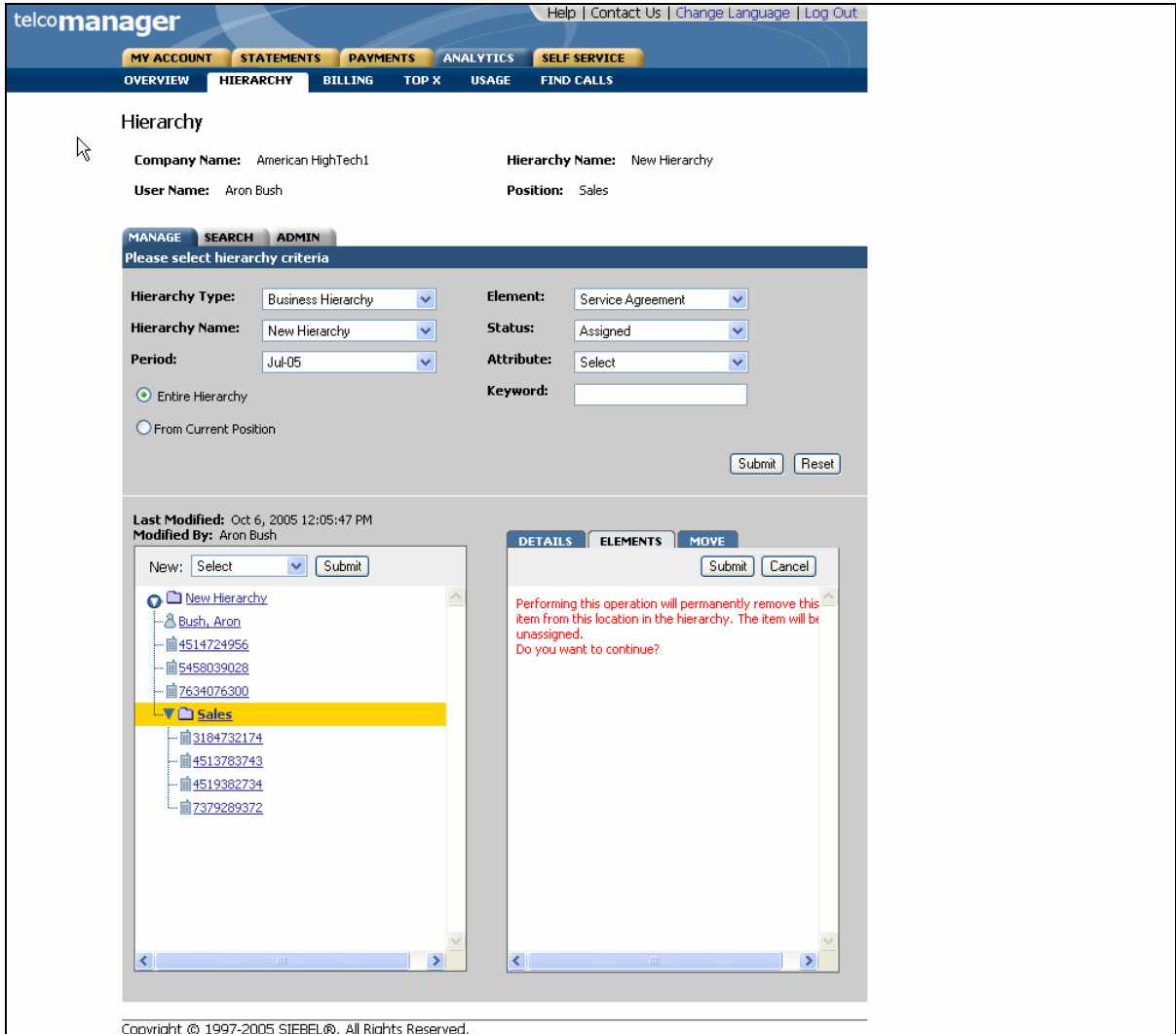
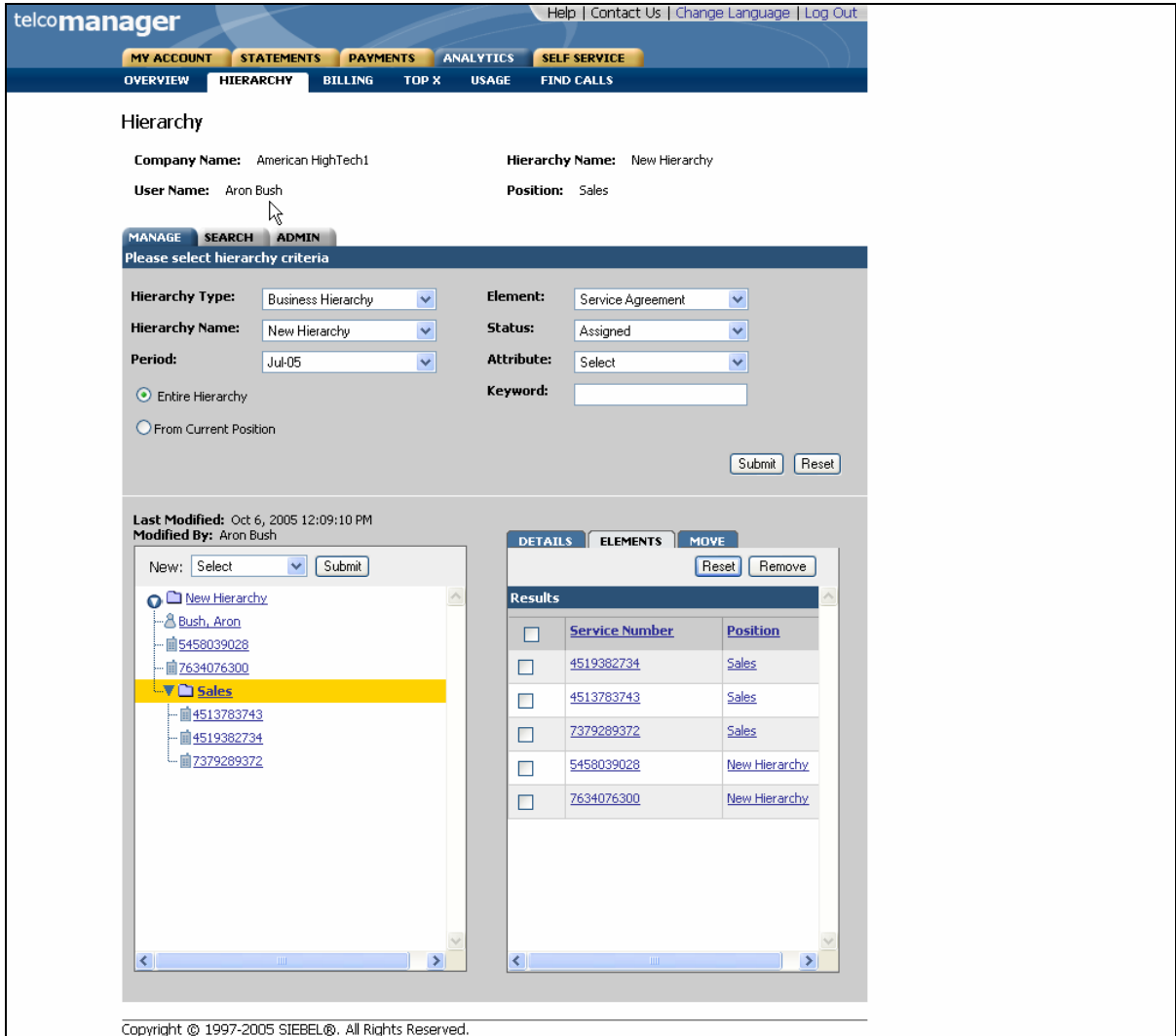Figure 17– Remove (Service) Element Step 2 (Details Tab): Remove Confirm Page

Figure 18 – Remove (Service) Element Step 3 (Details Tab): Remove Success
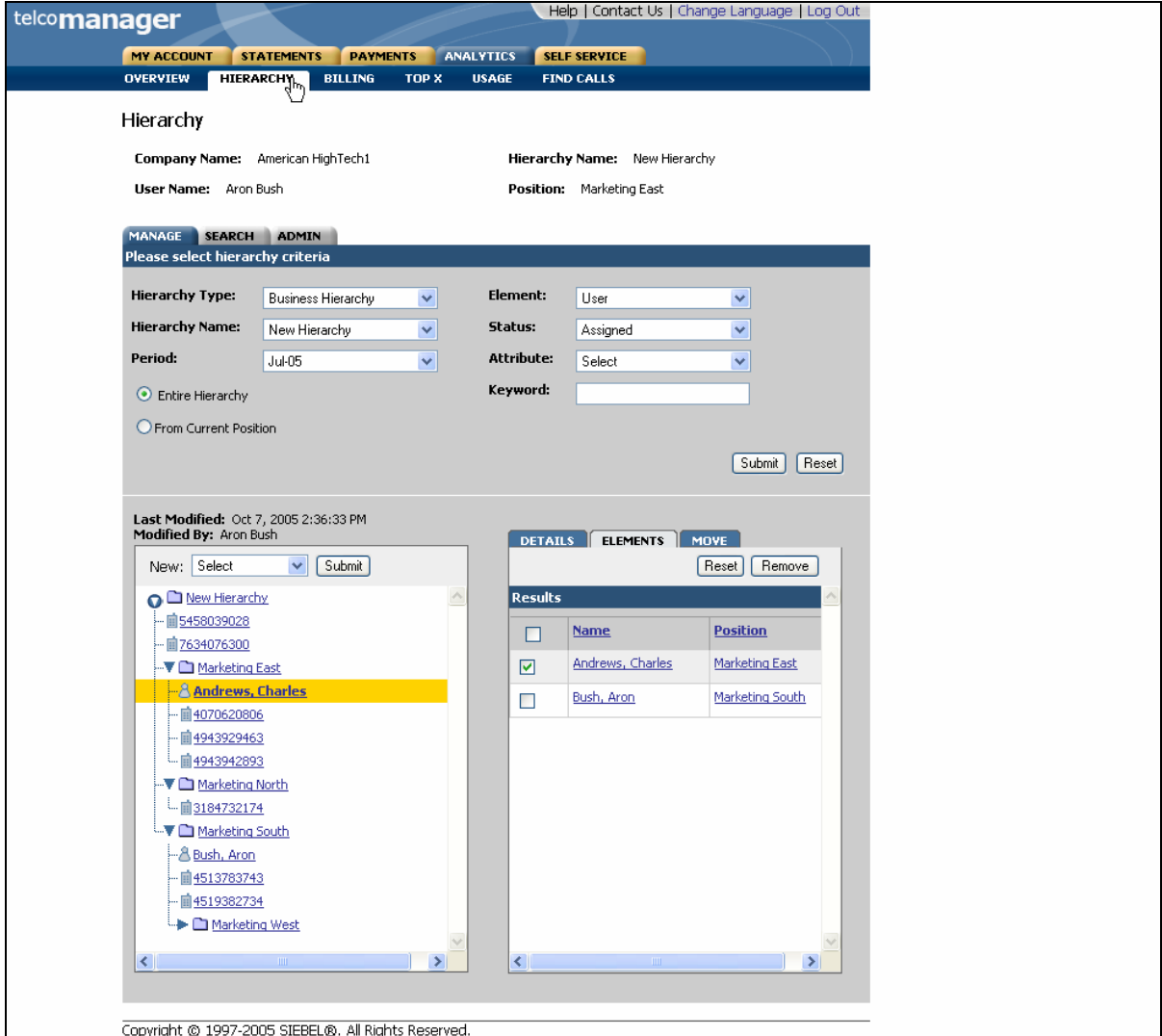
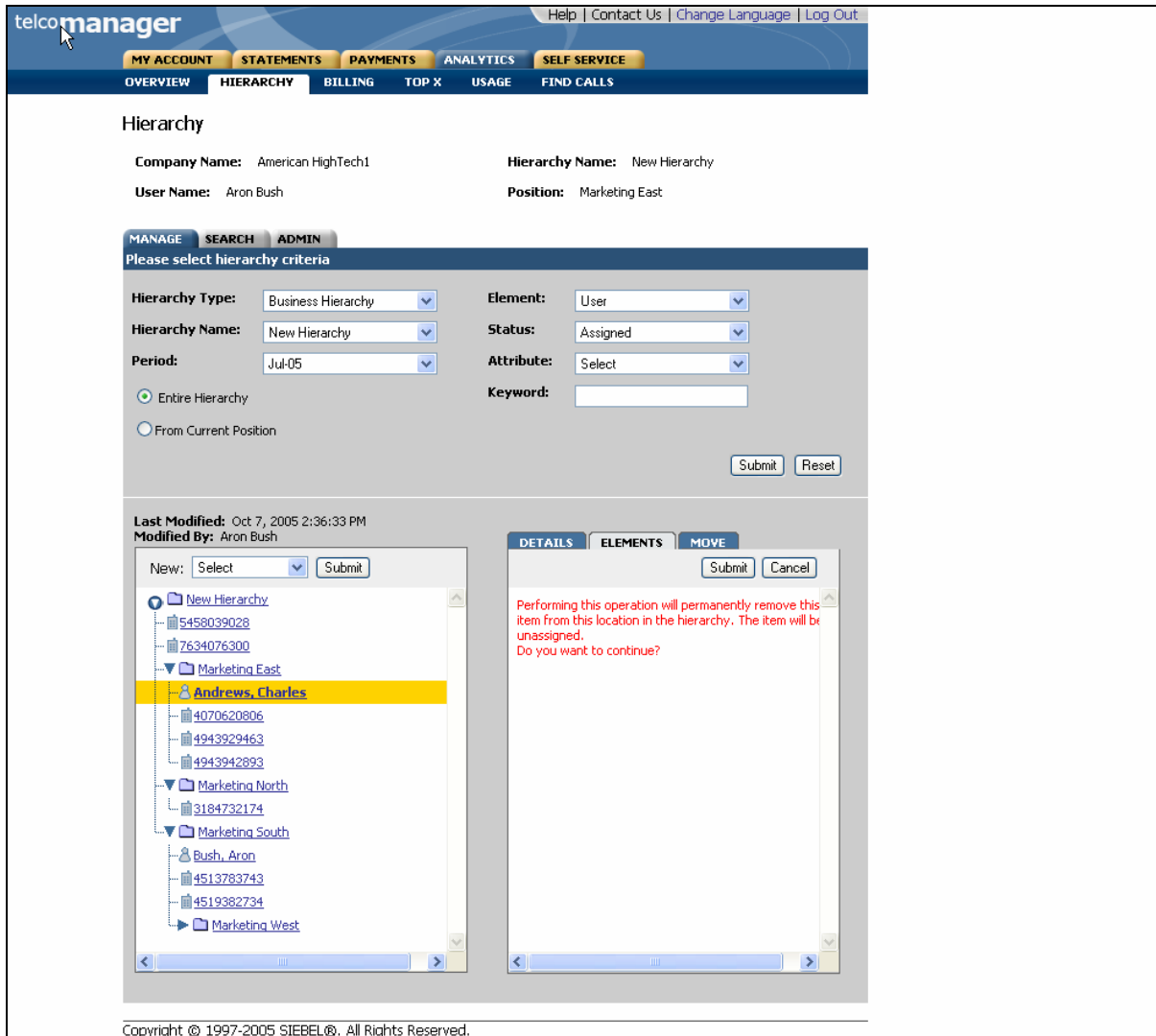Figure 19– Remove (User) Element Step 1 (Details Tab): Select Position

Figure 20– Remove (User) Element Step 2 (Details Tab): Remove Confirm Page
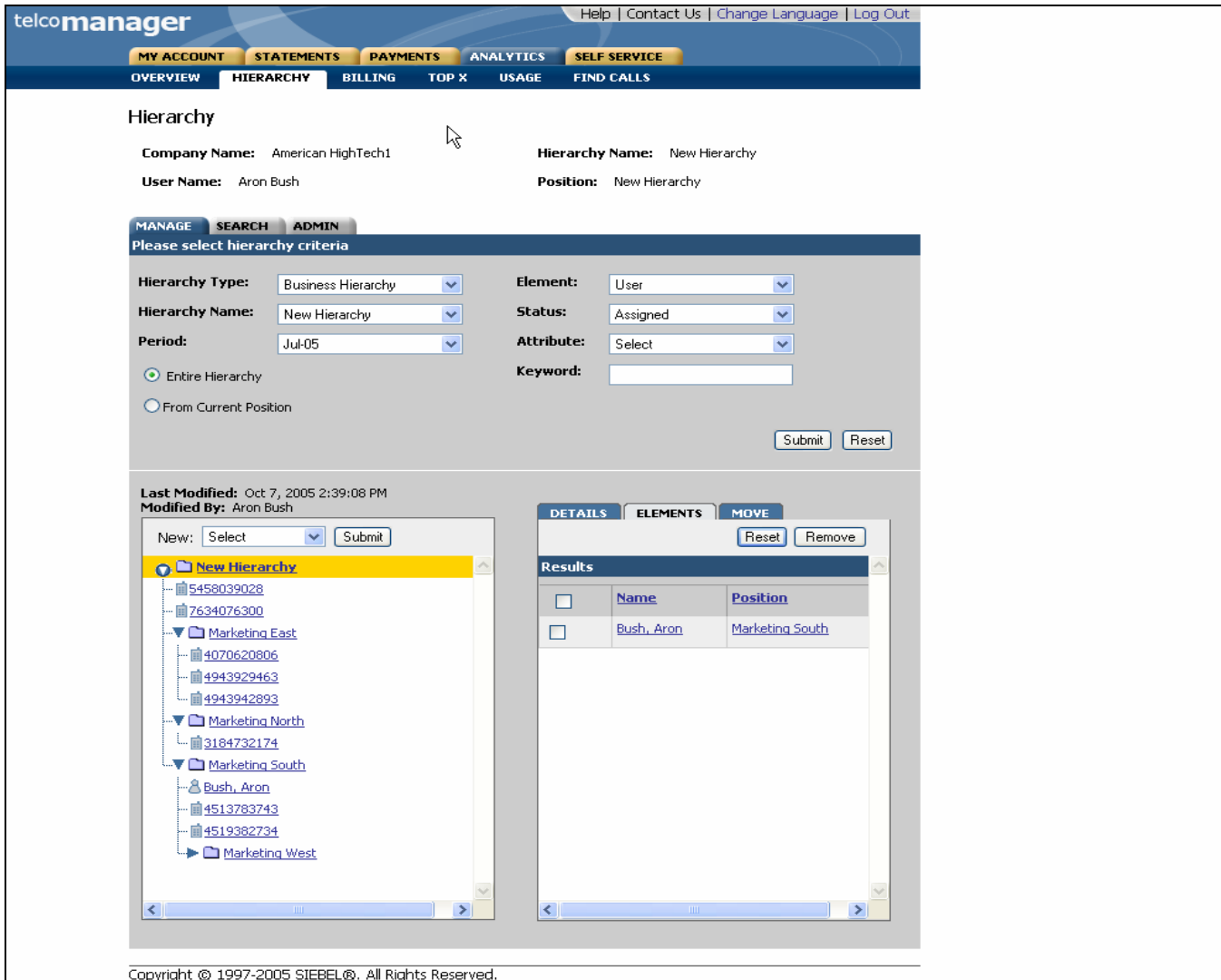
Figure 21– Remove (User) Element Step 3 (Details Tab): Remove Success

Modify Element Attributes

Name:	Modify Element Attributes
Brief Description:	Describes the mechanism of modifying element attributes.
Actor:	CSR, Admin, Manager
Entry Points	Manage Tab: Details Sub-Tab
Form Elements:	Hierarchy Search Criteria If there is no user specified default hierarchy type and hierarchy name, the system uses the first billing hierarchy in the hit list as the default 1. Hierarchy Type 2. Hierarchy Name 3. Period 4. Element 5. Status 6. Attribute 7. Keyword 8. Radio buttons: entire hierarchy or only the current position down. 9. Instructional text: "Please select hierarchy criteria" *For more information regarding fields and their defaults, refer to Manage User Interface Use Case. Bottom Right Pane: Details Sub-Tab * All fields are pre-populated with previously stored information. 1. Attributes for a Hierarchy: Hierarchy Name [Editable] Description [Editable] 2. Attributes for Groups: Hierarchy Name [Editable] Description [Editable] 3. Attributes for Accounts: Account No [Hard coded] Position [Hard coded] Contact [Editable] Address [Editable] City [Editable] State [Editable] Zip [Editable] 4. Attributes for Services: Number [Hard coded] Position [Hard coded] Subscriber [Editable] Rate Plan [Hard coded] Device [Hard coded] 5. Attributes for Users: Name [Editable]

	Position [Hard coded] Role [Hard coded] Username [Hard coded] Number [Editable]

Main Path:	1. User selects Manage Tab.
	
	2. System returns a page displaying:
	
	   a. Top Pane: Hierarchy Search Criteria Form with current context and defaults.
	
	   b. Bottom Left Pane: Graphical view of current hierarchy tree opened to current position context.
	
	   c. Bottom Right Pane: Details tab containing the details for current hierarchy context.
	
	3. User modifies attributes of current hierarchy context in the Details tab and selects the Submit action:
	
	4. System updates the Details with the new information entered by the user.
	
	5. Use case ends.

Alternate Paths:	**[A1]** User selects Reset action: 1. System invokes **Reset** use case.

Exception Paths:	**[E1]** **User encounters a validation error:**
	   1. System invokes Validation Error Message use case.
	
	[E2] **User encounters a system error:**
	   1. System invokes Error Message use case.

Business Rules:	**[B1]** Not all attributes can be modified. Refer Form Elements section of this use case for more information. **[B2]** Attributes from other sources (i.e. billing system) are display only and cannot be modified.

Figure 22– Modify Element Attributes Step 1: Select Position to Modify
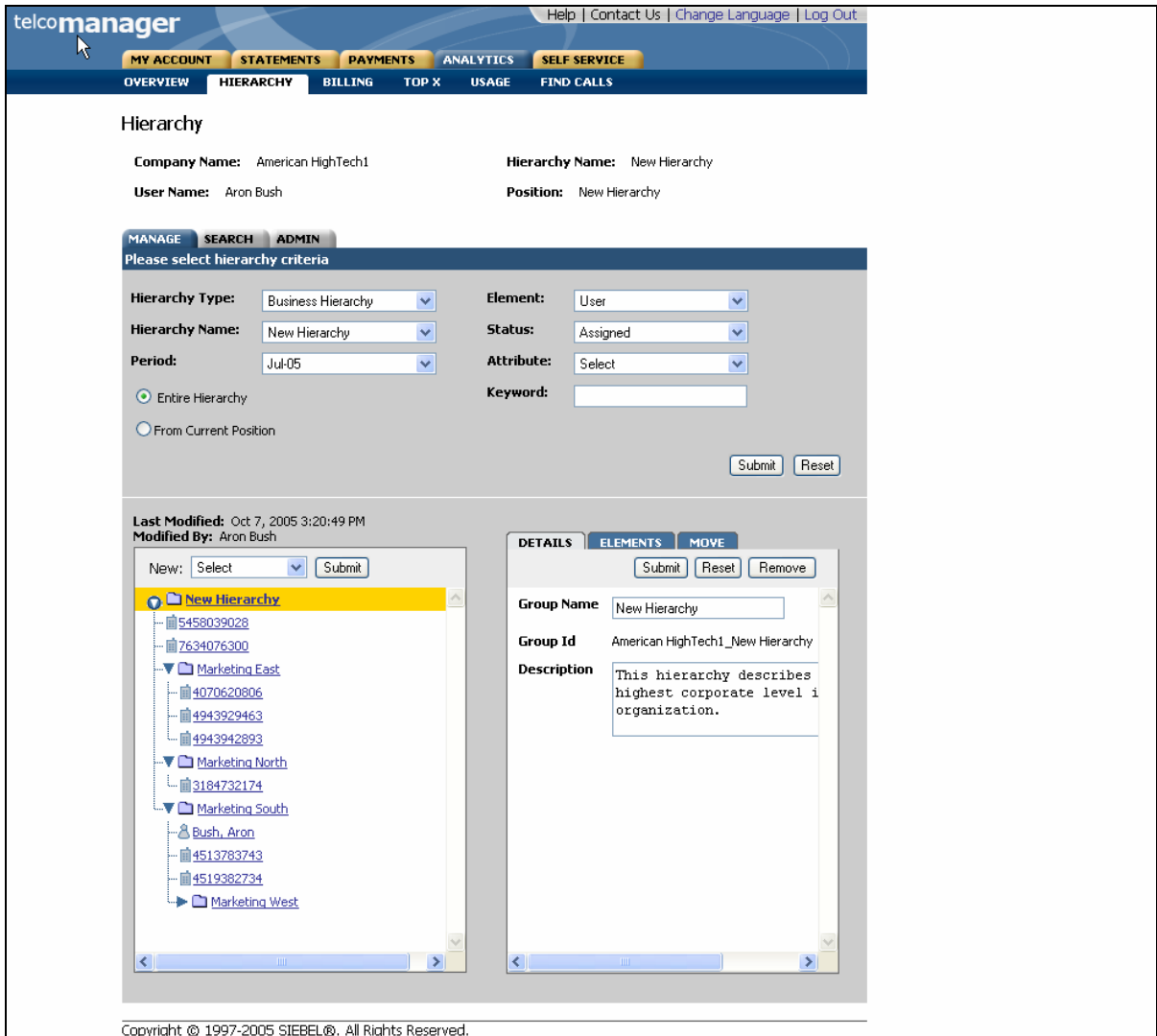
Figure 23– Modify Element Attributes Step 2: Successfully Modified

Move Elements

Name:	**Move Elements**
Brief Description:	Describes the mechanism of moving a group from one node to another within the same hierarchy.
Actors:	CSR, Admin, Manager
Entry Points	Manage Tab: Move Sub-tab

Form Elements:	Hierarchy Search Criteria
	If there is no user specified default hierarchy type and hierarchy name, the system uses the first billing hierarchy in the hit list as the default
	
	1. Hierarchy Type
	2. Hierarchy Name
	3. Period
	4. Element
	5. Status
	6. Attribute
	7. Keyword
	8. Radio buttons: entire hierarchy or only the current position down.
	9. Instructional text: "Please select hierarchy criteria"
	
	*For more information regarding fields and their defaults, refer to Manage User Interface Use Case.
	
	Bottom Right Pane: Move Sub-Tab
	
	1. Checkbox [node]
	   Selects all rows
	2. Checkbox [child branch]
	   Selects the individual branch

Main Path:	**1.** In the Manage tab, User navigates to the parent node of the structure where the desired group(s) to be moved are.
	2. User selects Move sub-tab.
	3. System displays a screen showing:
	   a. Left pane: Graphical hierarchy display of the current hierarchy
	   b. Right pane: Graphical hierarchy display of the current hierarchy with checkbox next to each node to permit specifying the nodes to be moved
	4. User selects the focus Node in the left pane where the selected nodes are to be moved
	5. User selects the checkbox next to all desired nodes to be moved to the focus node
	   a. If the focus node is a group then any type of node or user may be selected in the right move pane

	b. If the focus node is not a group then only Users may be selected in the right move pane **6.** User selects the Move action. **7.** System moves all selected nodes under the focus node in hierarchy. **8.** System redisplays page displayed a screen showing: a. Left pane: Updated hierarchy structure with parent mode where move was executed. b. Right pane: updated graphical display of all the groups in the current hierarchy. **9.** Use case ends.
Alternate Paths:	**[A1]** User selects Reset action: 1. System invokes **Reset** use case
Exception Paths:	**[E1]** **User encounters a validation error:** 1. System invokes Validation Error Message use case. **[E2]** **User encounters a system error:** 1. System invokes Error Message use case.
Business Rules:	**[B1]** The Move action changes the structure of the current version of the hierarchy specified by the Hierarchy Period only **[B2]** If user selects the checkbox next to a Group node, all elements below it are also selected. **[B3]** When elements are moved within the hierarchy, the fields "Last Modified" and "Modified By" are updated. **[B4]** Move Action can only take place within an Organization Hierarchy. Move cannot happen in a billing hierarchy.
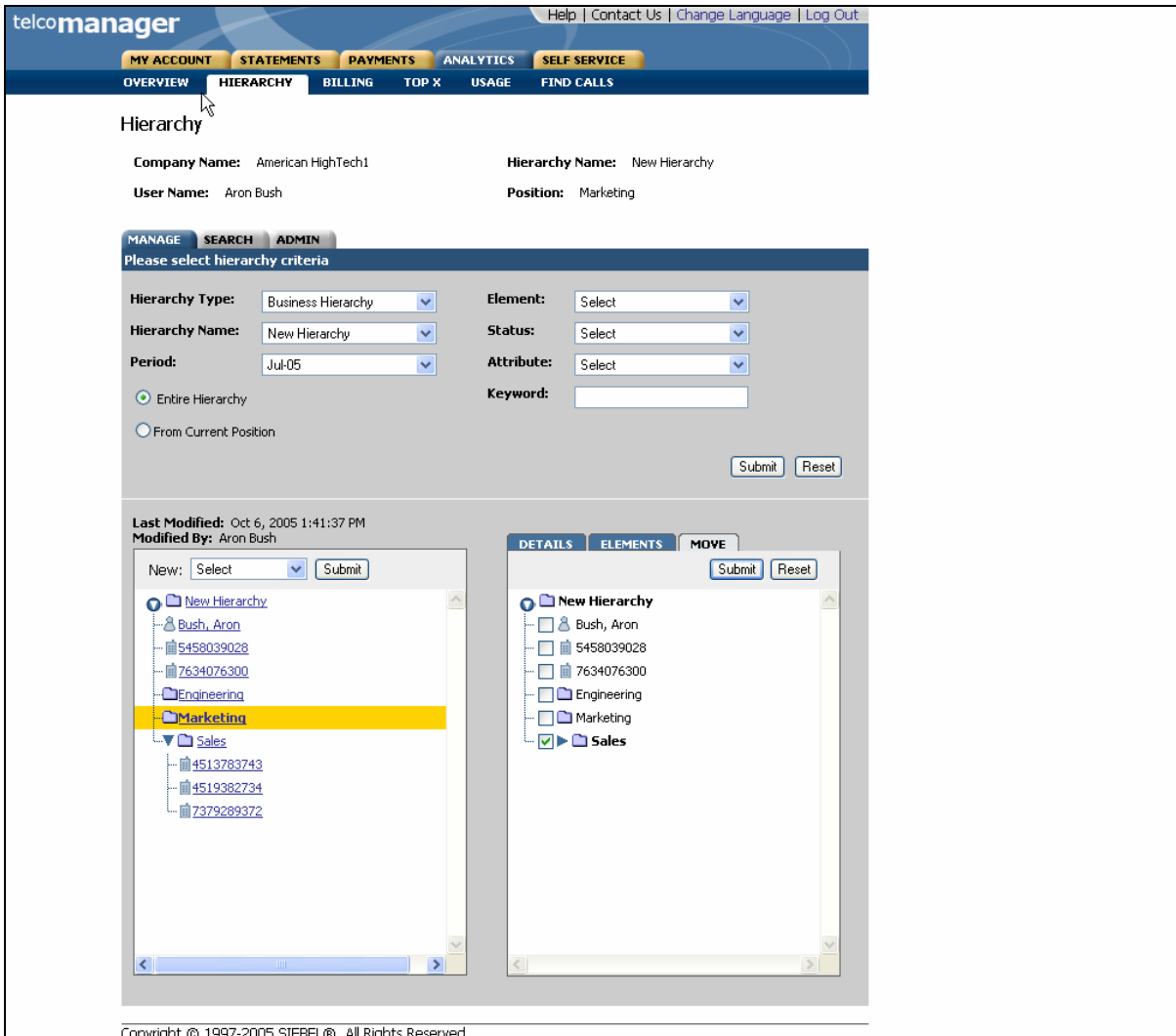
Figure 24– Move Group Specify Items to Move (right pane) and Location (highlighted in yellow in left pane)

Search

Search Hierarchy

Name:	Search Hierarchy
Brief Description:	User finds a particular group, account, services, and/or attributes for any node or leaf within a hierarchy.
Actors:	CSR, Admin, Manager
Entry Points	1. Search Tab
Form Elements:	**Hierarchy Search Criteria** If there is no user specified default hierarchy type and hierarchy name, the system uses the first billing hierarchy in the hit list as the default 1. Hierarchy Type 2. Hierarchy Name 3. Period 4. Element 5. Status 6. Attribute 7. Keyword 8. Radio buttons: entire hierarchy or only the current position down. 9. Instructional text: "Please select hierarchy criteria" *For more information regarding fields and their defaults, refer to Manage User Interface Use Case.
Report Content:	Search Results Fields For Element Groups 1. Name (Display name of element type Groups) 2. Position (The name of the hierarchy node one level above) 3. Display Name 4. Description Search Results Fields For Element Accounts 1. Account No. (Display name of element type Accounts) 2. Position (The name of the hierarchy node one level above) 3. Account Name 4. Contact Name 5. Address 6. City 7. State 8. Country

	9. Zip
	Search Results Fields For Element Services
	1. Service Number (Display name of element type Services)
	2. Position (The name of the hierarchy node one level above)
	3. Account Number
	4. Address
	5. Subscriber Name
	6. City
	7. State
	8. Country
	Search Results Fields For Element Users
	1. Name (Display name of element type User)
	2. Position (The name of the hierarchy node one level above)
	3. Role (in future release)
	4. Number
	5. Email
Main Path:	**1.** User selects Search Tab.
	2. System displays Hierarchy Search Criteria form with current context and defaults.
	3. User inputs search criteria by selecting an Attribute from the Attribute drop down and entering a key word OR by specifying other criteria such as Period, Status or Element and selects the Submit action.
	4. System checks to make sure that the required fields are specified as a search parameter.
	5. System validation passes.
	6. System displays a tabular search results report with the total count for the search result set and all attributes for the selected element type [A1]
	7. Use case ends.
Alternate Paths:	**[A1]** After the search results have been displayed, the User selects one or more checkboxes and selects the Submit action:
	1. System returns the user to the Manage tab displaying:
	i. Top pane: Hierarchy Search Criteria with specified search criteria context.
	ii. Bottom Left Pane: Graphical view of current hierarchy tree opened to current position context.
	iii. Bottom Right Pane: Elements tab containing the display name and position of the selected elements.
	[A2] User selects link of the display name of the specified element type for the search criteria:

<table>
<tr>
<td></td>
<td>

1. System returns the user to the Manage tab displaying:

   i. Top pane: Hierarchy Search Criteria with specified search criteria context.

   ii. Bottom Left Pane: Graphical view of current hierarchy tree opened to where the element selected is located in the tree in the bottom left pane.

   iii. Bottom Right Pane: Details tab containing the details for the selected element.

[A3] User selects Sorting action:

   1. System invokes <u>Sorting</u> use case.

[A4] User selects Paging action:

   1. System invokes <u>Paging</u> use case.

[A5] User selects Download action:

   1. System invokes <u>Download</u> use case.

[A6] User selects Printer-Friendly action:

   1. System invokes <u>Printer-Friendly</u> use case.

</td>
</tr>
<tr>
<td>**Exception Paths:**</td>
<td>

[E1] **User encounters a validation error:**

   1. System invokes <u>Validation Error Message</u> use case.

[E2] **User encounters a system error:**

   1. System invokes <u>Error Message</u> use case.

</td>
</tr>
<tr>
<td>**Business Rules:**</td>
<td>

[B1] Checkbox selections are persisted when paging. Selections are aggregated across pages.

[B2] If user selects the radio button for "Entire Hierarchy", the scope of the search is all the nodes in the hierarchy.

[B3] If user selects the radio button for "From Current Position", the scope of the search is relative to and limited by the nodes below the current position.

</td>
</tr>
</table>

Figure 25– Search (Users) Step 1: Specify Parameters and Search Results

Figure 26– Search (Services) Step 1: Specify Parameters and Search Results

Admin

Create Hierarchy

Name:	**Create Hierarchy**
Brief Description:	Describes the mechanism whereby a user can create a non-billing hierarchy (Organization or Consolidation).
Actors:	CSR, Admin, Manager
Entry Points	Admin Tab: Create Sub-tab
Form Elements:	Create Hierarchy Form 1. Hierarchy Type [Required: Default: Current Context] Dropdown: Default: Organization 2. Hierarchy Name [Required, Default: None, Length of field limit: 20] 3. Description [Optional, Default: None, Length of field limit: 80].
Main Path:	**1.** User selects Admin tab **2.** User selects the Create sub-tab **3.** System displays a create hierarchy form **4.** User inputs data to create the hierarchy and selects the Submit action. **5.** System checks to confirm that the entered hierarchy name does not already exist. **6.** System validation passes. **7.** System returns a message indicating the Hierarchy was Successfully created **8.** Use case ends.

Alternate Paths:	**[A1]** A billing hierarchy is automatically created when invoice data is loaded into the system with a status of Published.
	
	[A2] User selects Reset action:
	   1. System invokes **Reset** use case
	
	[A3] User selects Submit action:
	   1. System displays message :Please enter Hierarchy Name to create hierarchy.

Exception Paths:	**[E1]** **User encounters a validation error:**
	   1. System invokes Validation Error Message use case.
	
	[E2] **User or CSR encounters a system error:**
	   1. System invokes Error Message use case.

Business Rules:	**[B1]** Only Organizational and Consolidation hierarchies can be created by a User

	[B2] Consolidation hierarchies group together multiple billing hierarchies into a single hierarchy. The structures within the billing hierarchies are completely preserved.

Figure 27–Create Hierarchy Step 1: Specify Non-Billing Hierarchy Parameters
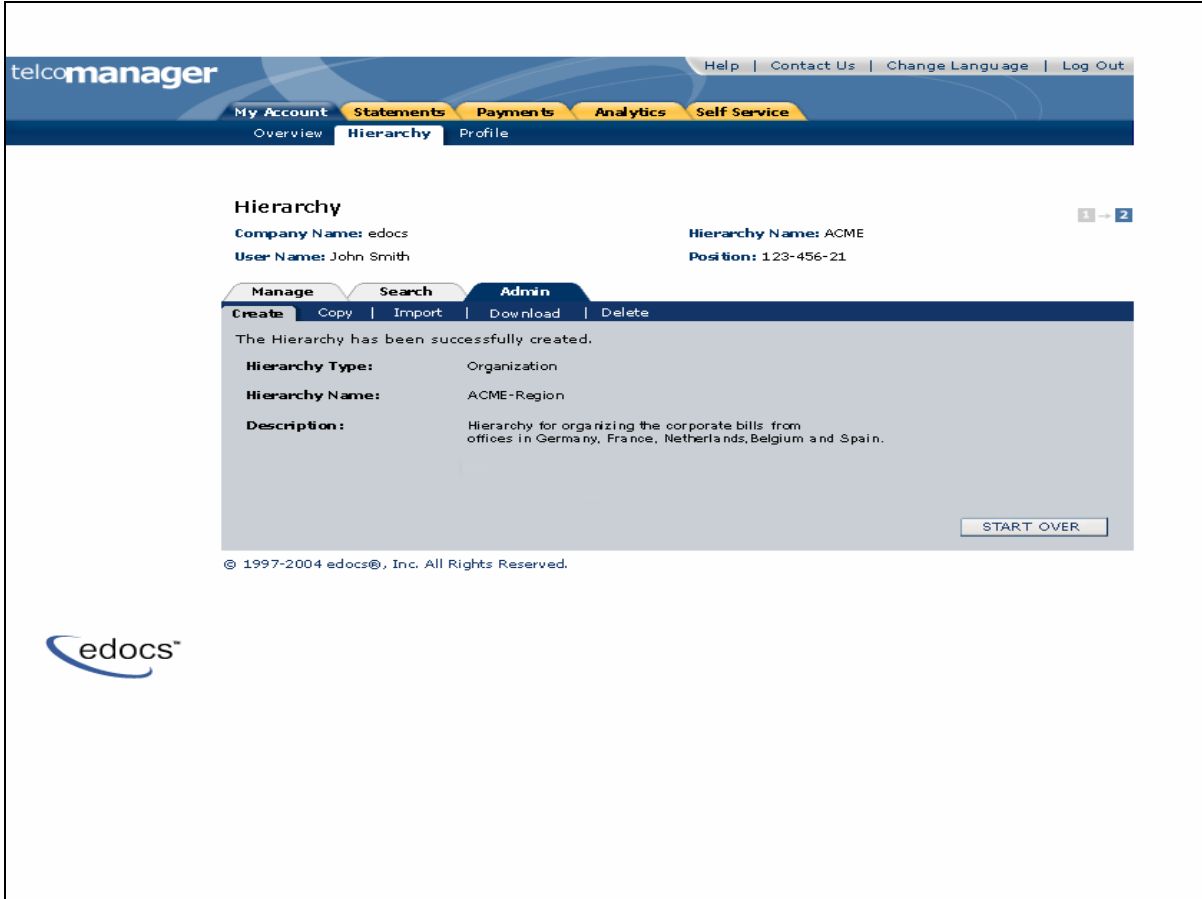
Figure 28– Create Hierarchy Step 2: Non-Billing Hierarchy Created

Copy Hierarchy

Name:	**Copy Hierarchy**
Brief Description:	Describes the mechanism whereby a user can copy an entire hierarchy or from a node including all of the children nodes to create a new hierarchy.
Actors:	CSR, Admin, Manager
Entry Points	Admin Tab: Copy Sub-tab
Form Elements:	**Hierarchy Search Criteria** 1. Hierarchy Type Dropdown: [Organization, Consolidation] 2. Hierarchy Name 3. Period: [Current Period] Dropdown: up to 12 months, configurable *For more information regarding fields and their defaults, refer to Manage User Interface Use Case. **Copy Hierarchy Form (Details Sub-tab)** 1. Hierarchy Type [Default: Current Context, Hard coded] 2. Hierarchy Name [Required: Default: Blank] 3. Description [Optional, Default: Blank] 4. Instructional Text: "Please select the Hierarchy or Group you want to copy to a new Hierarchy"

Main Path:	**1.** User selects Admin tab
	
	2. User select Copy sub-tab
	
	3. User selects a hierarchy to be copied from the Hierarchy Drop down.
	
	4. User selects Submit Button [A1]
	
	5. User specifies new name for the hierarchy to be copied and selects the Submit action.
	
	6. System checks to confirm that the entered hierarchy name does not already exist. [A4]
	
	7. System validation passes.
	
	8. System creates a new hierarchy with a status of Unpublished
	
	9. System returns the success page displaying "The Hierarchy has been successfully created" and the following information:
	
	   a. Top pane: [Hierarchy Search Criteria pre-populated with copied hierarchy information]
	
	   b. Left pane: [Graphical view with copied hierarchy as the top node]
	
	   c. Right pane: [Details tab hard-coded with information entered by user for the copied hierarchy]

	10. Use case ends.
Alternate Paths:	**[A1]** System invokes **Reset** use case. 1. System displays message: Hierarchy Name already exists.
Exception Paths:	**[E1] User encounters a validation error:** 1. System invokes Validation Error Message use case. **[E2]** User encounters a system error: 1. System invokes Error Message use case.
Business Rules:	**[B1]** Only non-billing hierarchies or groups can be copied and can only be copied into a new hierarchy. **[B2]** A Hierarchy need not be published in order to use the Copy function
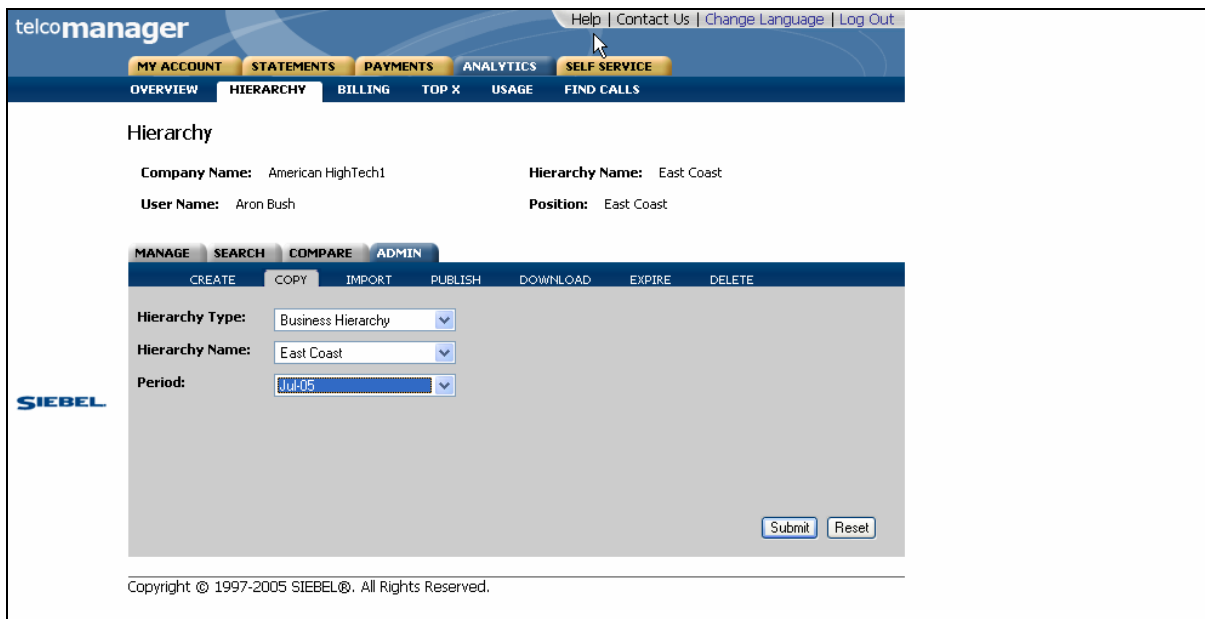
Figure 29– Copy Hierarchy Step 1: Select Hierarchy to Copy
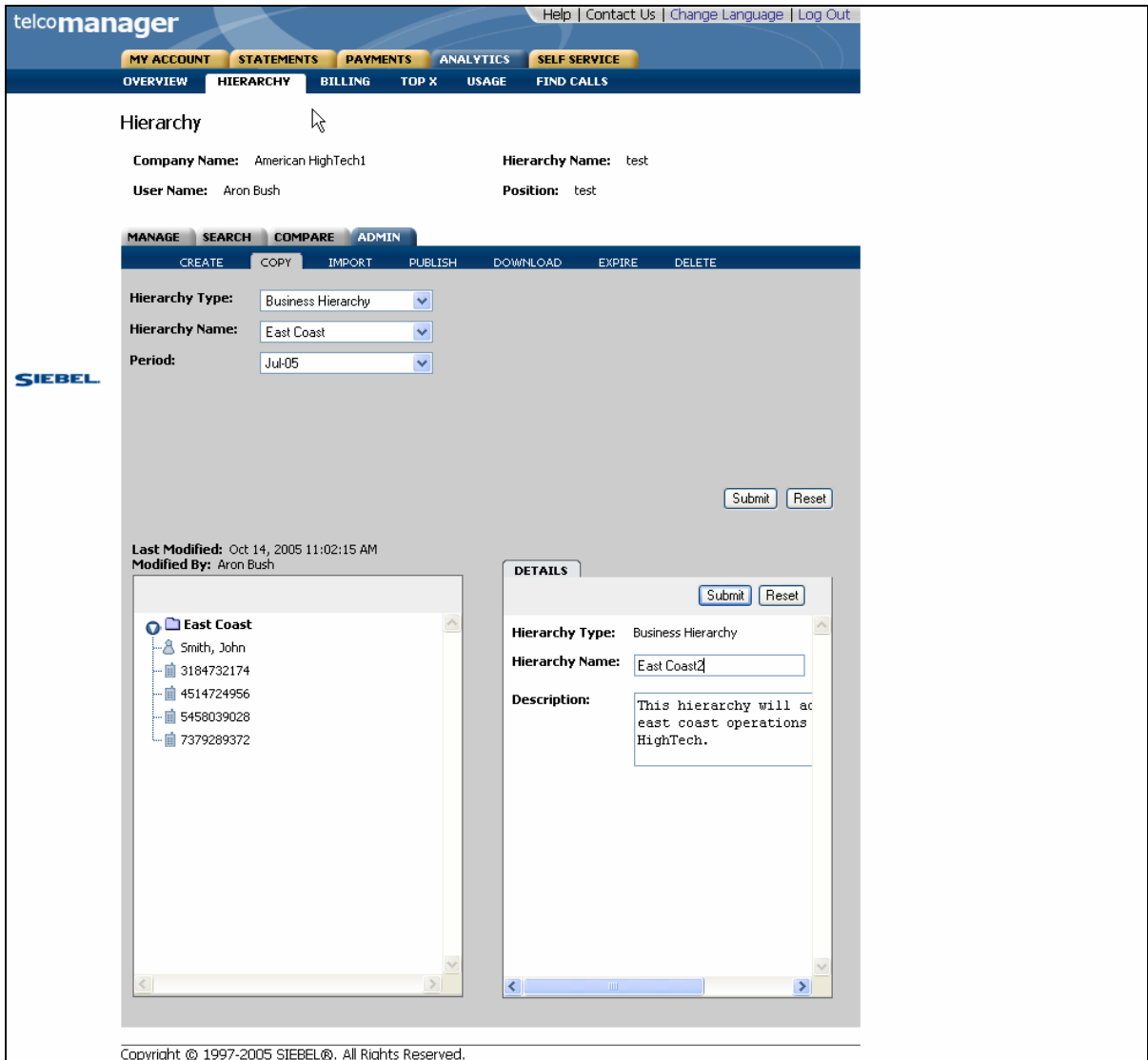
Figure 30– Copy Hierarchy Step 2: Specify Parameters for Hierarchy to be copied
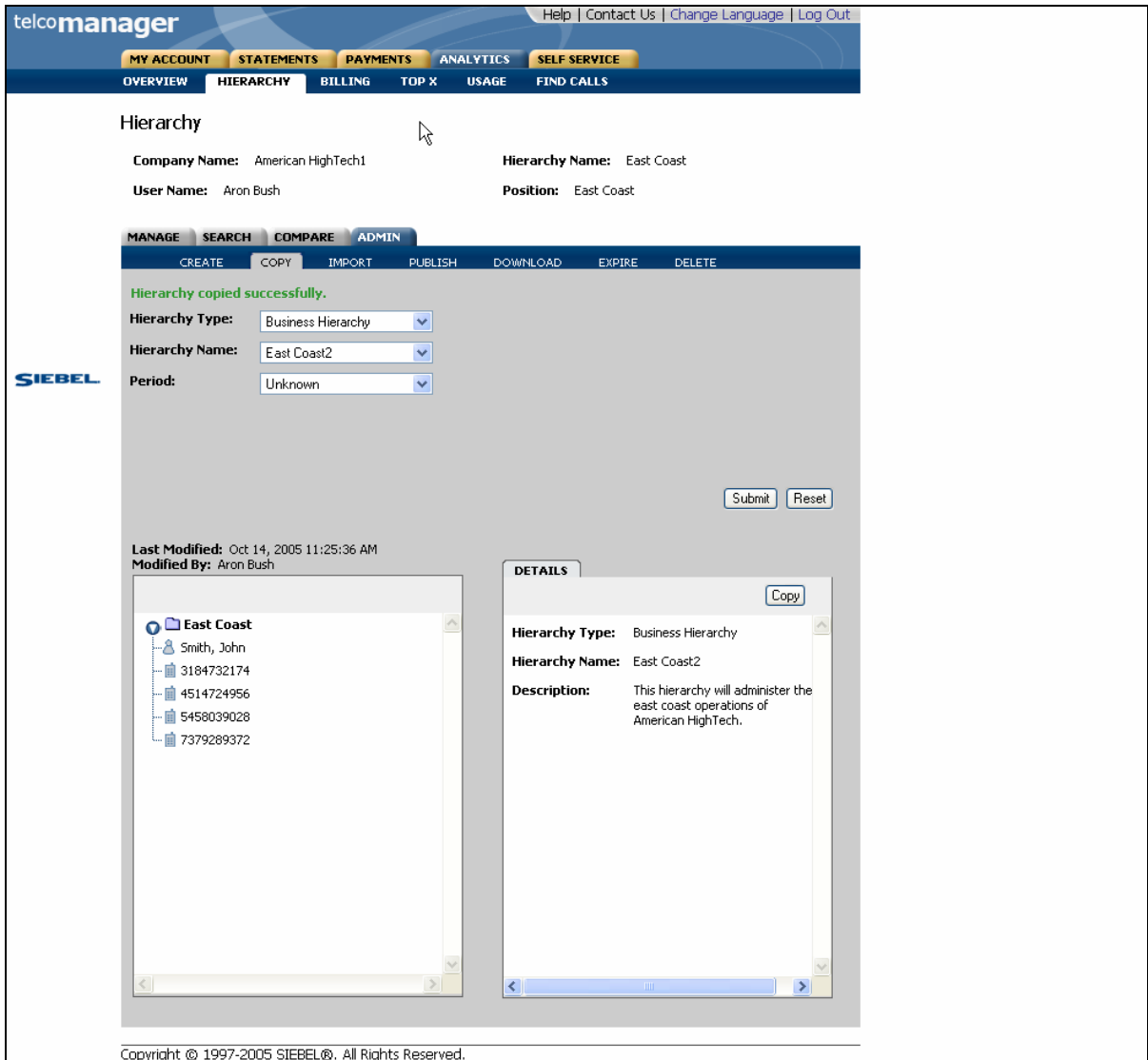
Figure 31– Copy Hierarchy Step 3: Hierarchy Copied

Import Hierarchy

Name:	Import Hierarchy
Brief Description:	Describes the mechanism whereby a user can import a hierarchy.
Actors:	CSR, Admin, Manager
Entry Points	Admin Tab: Import Sub-tab
Form Elements:	<u>Import Non-Billing Hierarchy Form</u> 1. Select File [Required: XML file type only]

Main Path:	**1.** User selects Admin tab
	
	2. User selects Import sub-tab
	
	3. System displays Import Hierarchy Form.
	
	4. User specifies file to be imported and selects the periods from the drop down box and selects Submit action.
	
	5. System reads hierarchy meta data including hierarchy type, hierarchy name, and description data (if available) contained in the specified file
	
	   a. System checks to confirm that the hierarchy name does not already exist **[A1]**
	
	   b. System hierarchy validation passes
	
	   c. System refreshes page with the graphical view of the hierarchy on the left pane and the hierarchy attributes on the right pane with the confirmation message stating "Performing this operation will import the Hierarchy
	
	6. User confirms the import by selecting the Submit action
	
	7. System creates a new hierarchy from the imported data in an Unpublished status.
	
	8. System refreshes the Import page with the success page stating "The Hierarchy has been successfully imported" and the following information: :
	
	   a. [Hierarchy Import Criteria pre-populated with information read in or entered by user to create the imported hierarchy] with Start and End Periods
	
	   b. Import Status: Displays the new name of the Imported Hierarchy along with the folder information and service agreements
	
	9. To re-confirm the imported Hierarchy, go to the Manage Tab.
	
	10. Use case ends.

Alternate Paths:	**[A1]** User Imports a hierarchy that already exists in the system
	
	   1. System displays a message "A hierarchy of the same name already exists. Select submit to update the hierarchy"
	
	[A2] User selects Submit action
	
	   1. System updates and saves the hierarchy

	2. System invokes **Cancel** use case and does not save the imported hierarchy.
	[A3] User selects Reset action:
	1. System invokes **Reset** use case.
	[A4] User selects Start Over action:
Exception Paths:	**[E1]** **User encounters a validation error:**
	1. System invokes Validation Error Message use case.
	[E2] **User or CSR encounters a system error:**
	1. System invokes Error Message use case.
Business Rules:	**[B1]** Only non-billing hierarchies can be imported. This includes both organization and consolidation hierarchy types.
	[B2] Only XML file types can be imported that comply with the hierarchy load data format specification.
	[B3] Name, Type, and Description of the hierarchy information must be contained with the file being imported.
	[B4] Validation of the XML source compliance with the definition of the hierarchy type specified within the file
	[B5] The user who initiates the hierarchy import is automatically assigned to the root node of the hierarchy
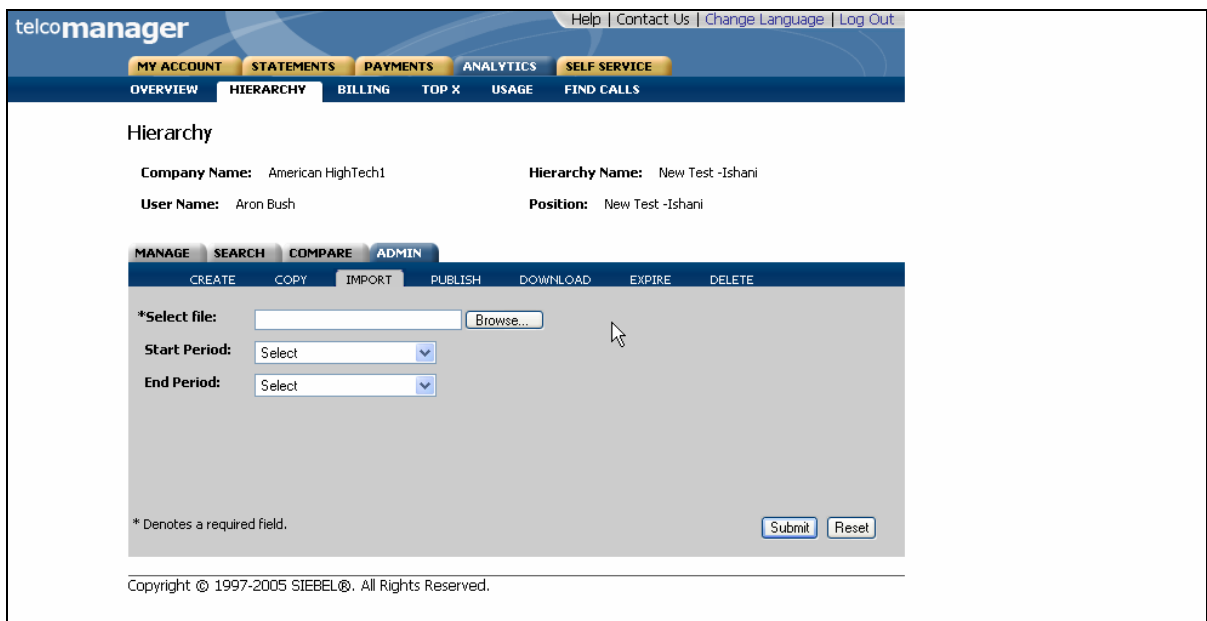
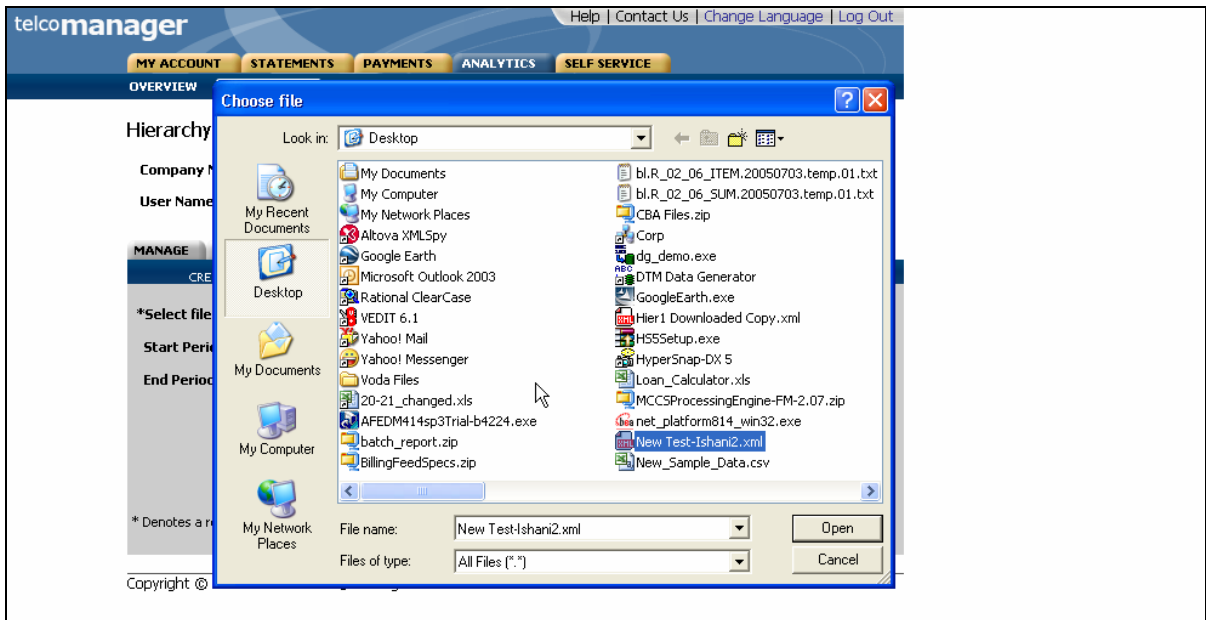Figure 32– Import Hierarchy Step 1: Import Form

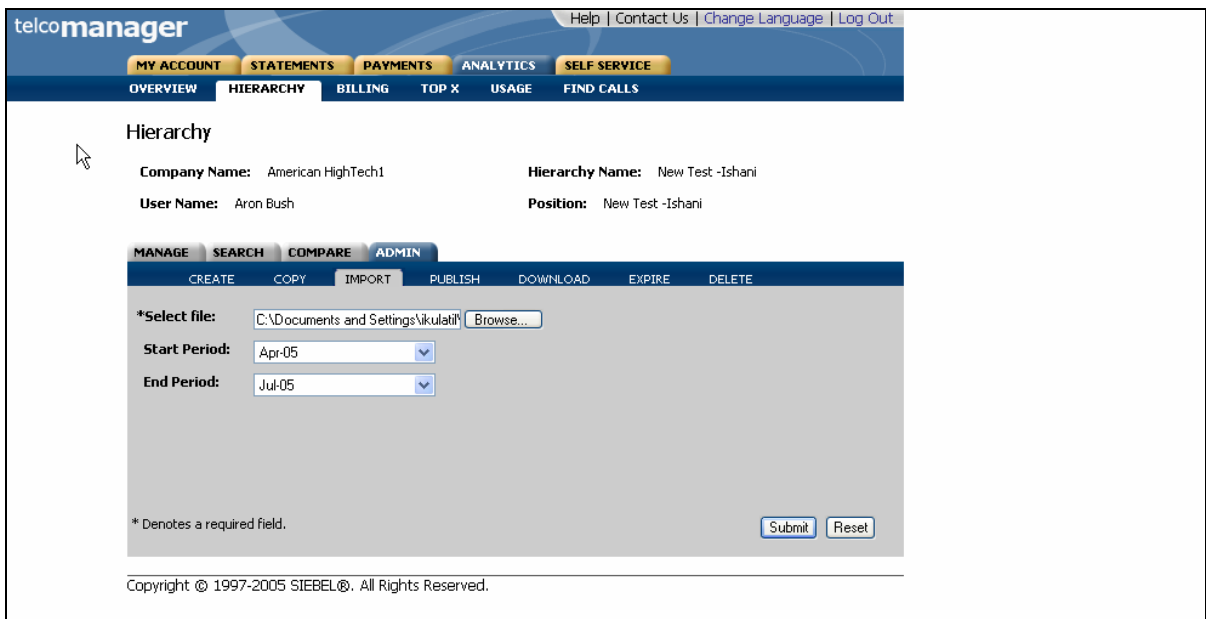Figure 33– Import Hierarchy Step 1: Browse for File to Import

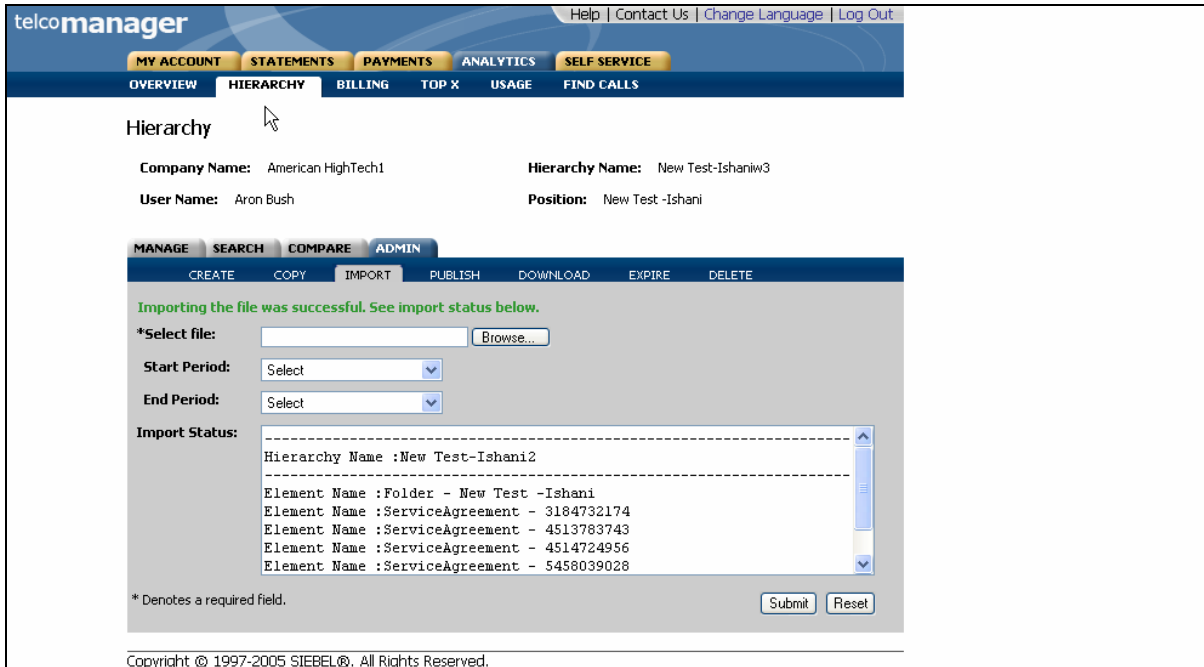Figure 34– Import Hierarchy Step1: Specify Parameters

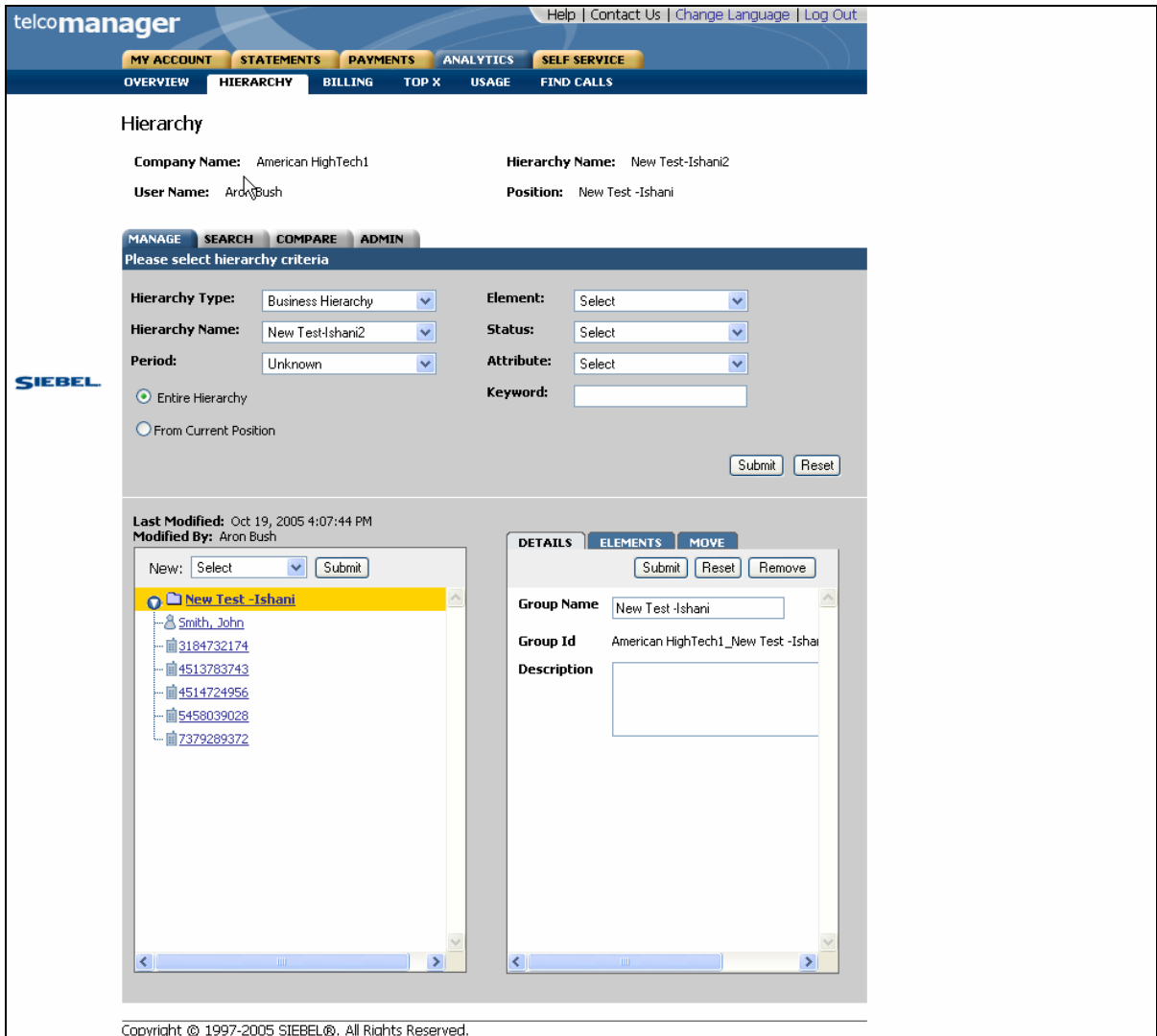Figure 35– Import Hierarchy Step 2: Imported Hierarchy Confirm Page

Figure 36– Import Hierarchy Step 3: Imported Hierarchy Success

Publish Hierarchy

Name:	**Publish Hierarchy**
Brief Description:	Describes the mechanism whereby a user can publish a hierarchy.
Actors:	CSR, Admin, Manager
Entry Points	Admin Tab: Publish Sub-tab
Form Elements:	<u>Publish Hierarchy Form</u> 1. Hierarchy Type [Required: Default: Current Context] Dropdown: [Billing, Consolidation, Organization] 2. Hierarchy Name [Required: Default: Current Context] Dropdown: [{Hierarchy Names stored in the system] 3. Period Start [Required: Default: Current Context] 4. Period End [Required: Default: Current Context]
Main Path:	**1.** User selects Admin Tab and Publish sub-tab **2.** System displays Publish Hierarchy Form. **3.** User selects the Hierarchy name from the drop down that needs to be published and the appropriate dates from the drop down and press Submit action. **4.** System displays a status message of "Hierarchy Successfully Published" **5.** User selects the submit action **6.** Use case ends.
Alternate Paths:	**[A1]** User selects Reset action: 1. System invokes **Reset** use case.
Exception Paths:	**[E1]** **User encounters a system error:** 1. System invokes **Error Message** use case.
Business Rules:	**[B1]** Any Organization hierarchy that is created should be publishable. The user will have to ensure there is data for the period that the hierarchy is published. **[B2]** If a Hierarchy is already published it will not show up in the drop down. **[B3]** The End Period has to be greater than the Start Period **[B4]** A Hierarchy cannot be published after it expires and can only be published once.
Notes:	
Questions:	

Figure 37- Publish Hierarchy Form

Figure 38- Publish Hierarchy Step1: Specify parameters
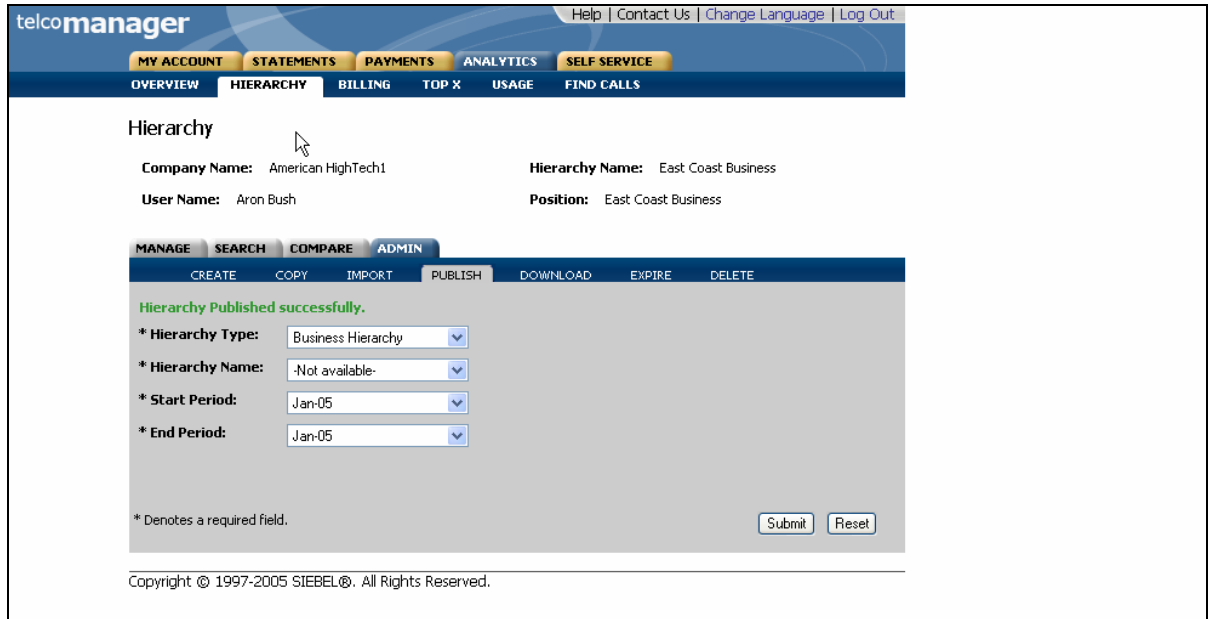
Figure 39– Publish Hierarchy Step2: Success

Download Hierarchy

Name:	**Download Hierarchy**
Brief Description:	Describes the mechanism whereby a user can download a hierarchy.
Actors:	CSR, Admin, Manager
Entry Points	Admin Tab: Download Sub-tab
Form Elements:	<u>Download Hierarchy Form</u> 1. Hierarchy Type [Required: Default: Current Context] Dropdown: [Billing, Consolidation, Organization] 2. Hierarchy Name [Required: Default: Current Context] Dropdown: [{Hierarchy Names stored in the system] 3. Period [Required: Default: Current Context] 4. New Name [Required: New name for the file] 5. Format [Required: Default: XML] Dropdown [XML]
Main Path:	1. User selects Admin Tab and Download sub-tab 2. System displays Download Hierarchy Form. 3. User specifies the data for the download and selects the Submit action. 4. User browser displays a dialog box with the options for download. 5. User selects browser Save function. 6. User browser returns a dialog box for Save function. 7. User enters a name for the file and selects Save to complete download function. 8. System returns the user to the download hierarchy form defaulted to the current context. 9. Use case ends.
Alternate Paths:	**[A1]** User selects Reset action: 1. System invoked Reset use case.
Exception Paths:	**[E1] User encounters a system error:** 1. System invokes **Error Message** use case.
Business Rules:	**[B1]** Any type of hierarchy can be downloaded. **[B2]** Download is only available in XML format.
Notes:	Uses standard browser download function. XML format supported in the current implementation. The Download format is equivalent to the Import format. Other formats will be supported in future releases.

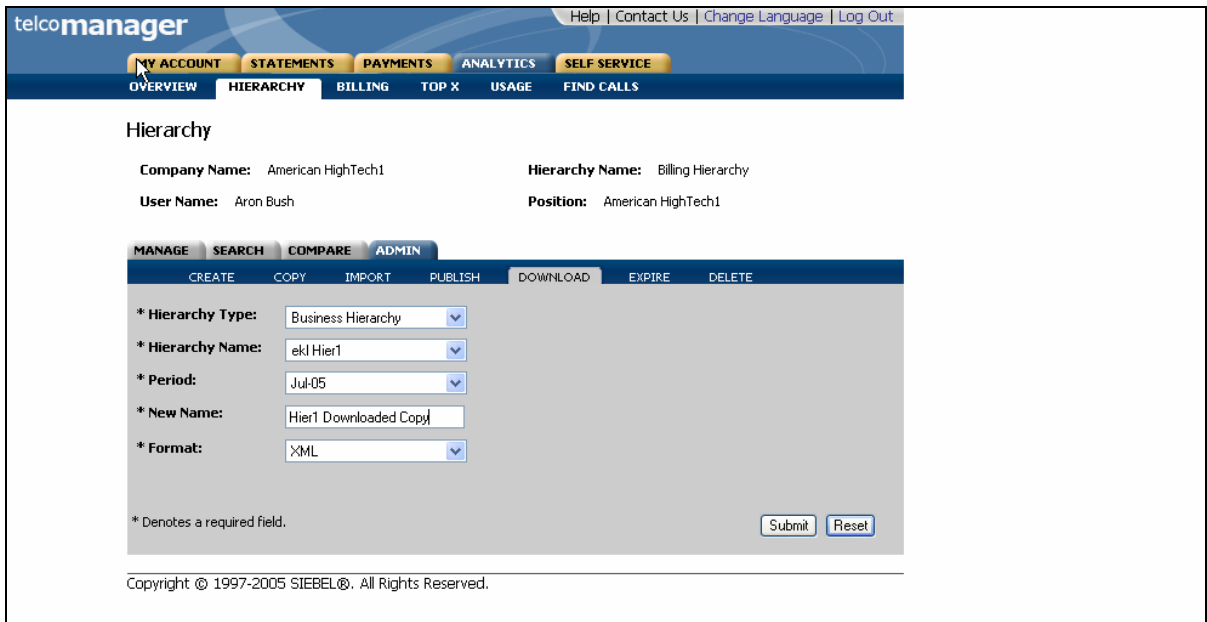| Questions:	What if the user is assigned to more than one location within the hierarchy? Does the user have to choose a position or are all positions downloaded using the virtual top node as a starting point?

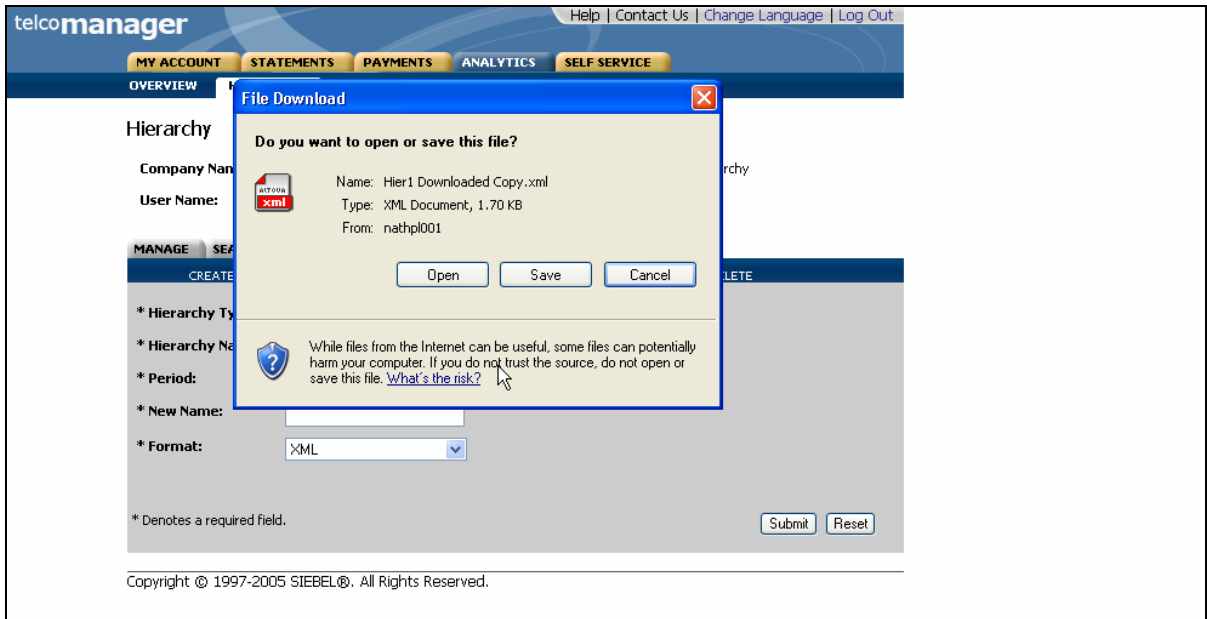Figure 40– Download Step 1: Specify Parameters

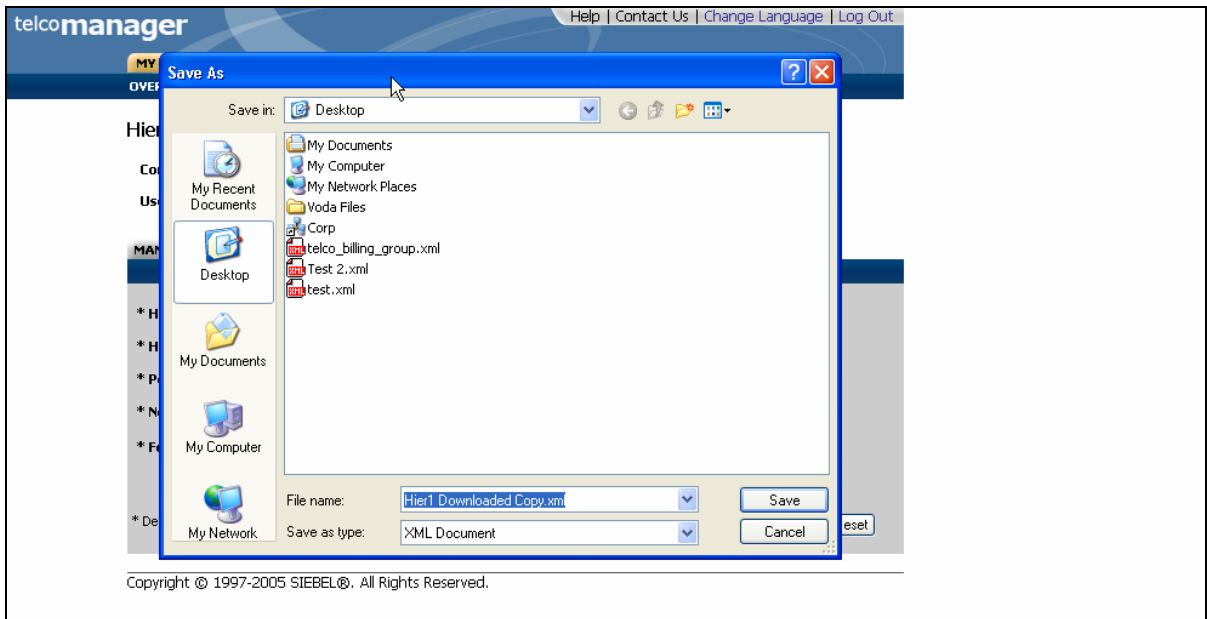Figure 41– Download Step 2: Select Save As Option

Figure 42– Download Step 3: Specify Location

Expire Hierarchy

Name:	**Expire Hierarchy**
Brief Description:	Describes the mechanism whereby a user expires a non-billing hierarchy.
Actors:	CSR, Admin, Manager
Entry Points	Admin Tab: Expire Sub-tab
Form Elements:	Expire Hierarchy Form 1. Hierarchy Type [Required: Default: Current Context] Dropdown: [Consolidation, Organization] 2. Hierarchy Name [Required: Default: Current Context] Dropdown: [Hierarchy Names stored in the system] 3. Period [Required: Default: latest period in hierarchy]

Main Path:	1. User selects Admin tab and Expire sub-tab
	
	2. System displays Expire Hierarchy Form.
	
	3. User specifies the hierarchy and the period for the hierarchy to be expired and selects the Submit action.
	
	4. System validation passes.
	
	5. System returns a page displaying:
	
	    a. Top pane: Hierarchy Name and Period of the Hierarchy to be expired
	
	    b. Left pane: [Graphical view of the hierarchy to be expired]
	
	    c. Right pane: [Details tab pre-populated with information for the hierarchy about to be expired] System displays the following confirmation message on the right pane: "Performing this operation will permanently expire the hierarchy and cannot be reversed. Do you want to continue?"
	
	6. User selects Expire action.
	
	7. System expires selected hierarchy and all nodes below it.
	
	8. System returns a success page stating: "The Hierarchy has been successfully expired."
	
	9. Use case ends.

Alternate Paths:	[A1] User selects Reset action: 1. System invokes **Reset** use case.

Exception Paths:	[E1] **User encounters a validation error:**
	    1. System invokes Validation Error Message use case.
	
	[E2] User or CSR encounters a system error:
	    1. System invokes Error Message use case.

Business Rules:	[B1] Only non-billing hierarchies can be expired. Users assigned to expired hierarchies remains assigned.

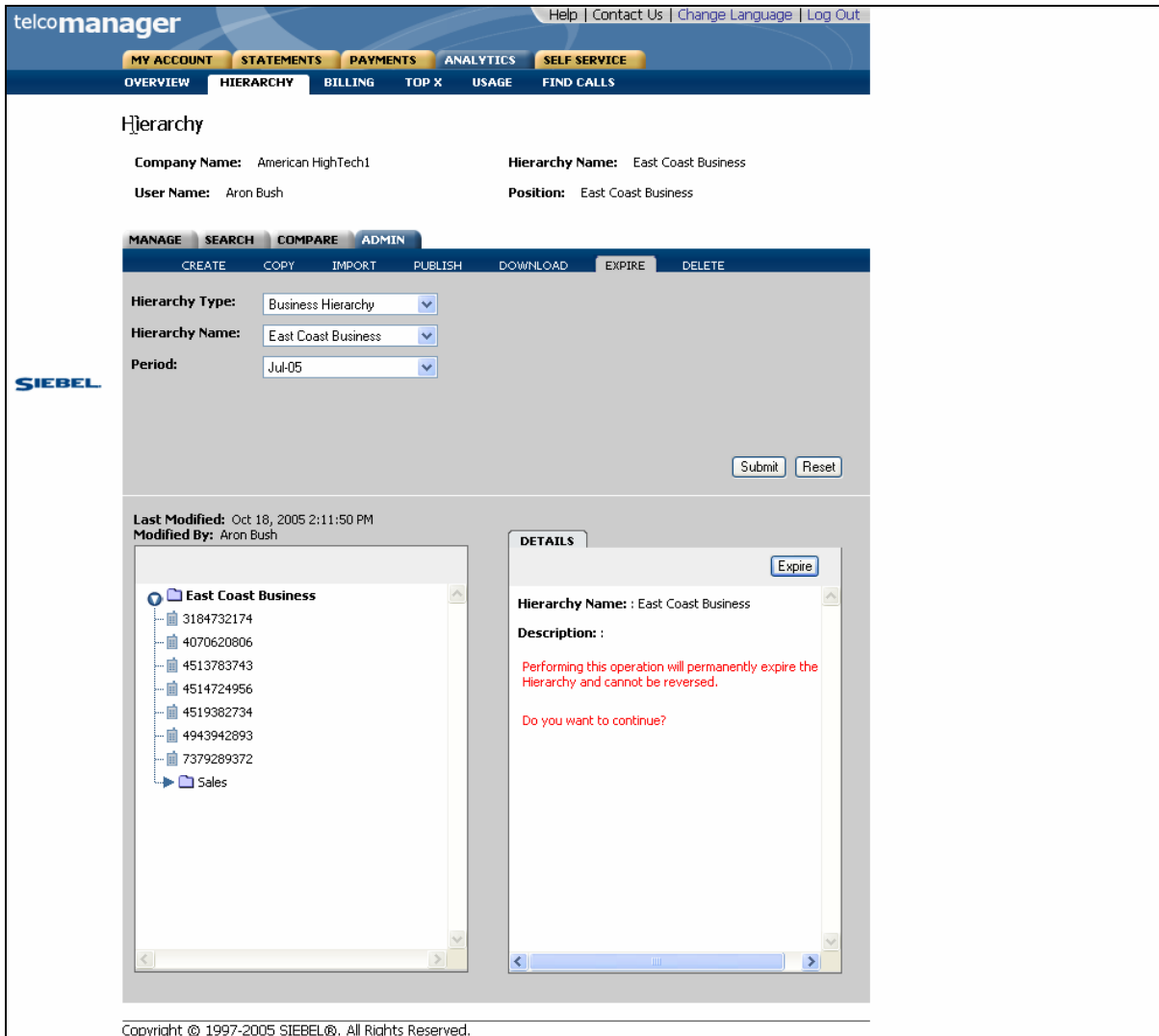|	
	[B2] Accounts are unassigned from hierarchy expired and are moved to unassigned status but maintain any user settings. **[B3]** Services are unassigned from hierarchy expired and are moved to unassigned status but maintain any user settings. **[B4]** Managers [only if they create the hierarchy], admin [regardless of who created the hierarchy] but Subscribers cannot Expire Hierarchies **[B5]** A user may only expire hierarchies that they are assigned to the root node and have the appropriate permissions.
Notes:	None
Questions:	None

Figure 43- Expire Hierarchy Form

Figure 44- Expire Hierarchy Step 1: Select Hierarchy and Period to Expire
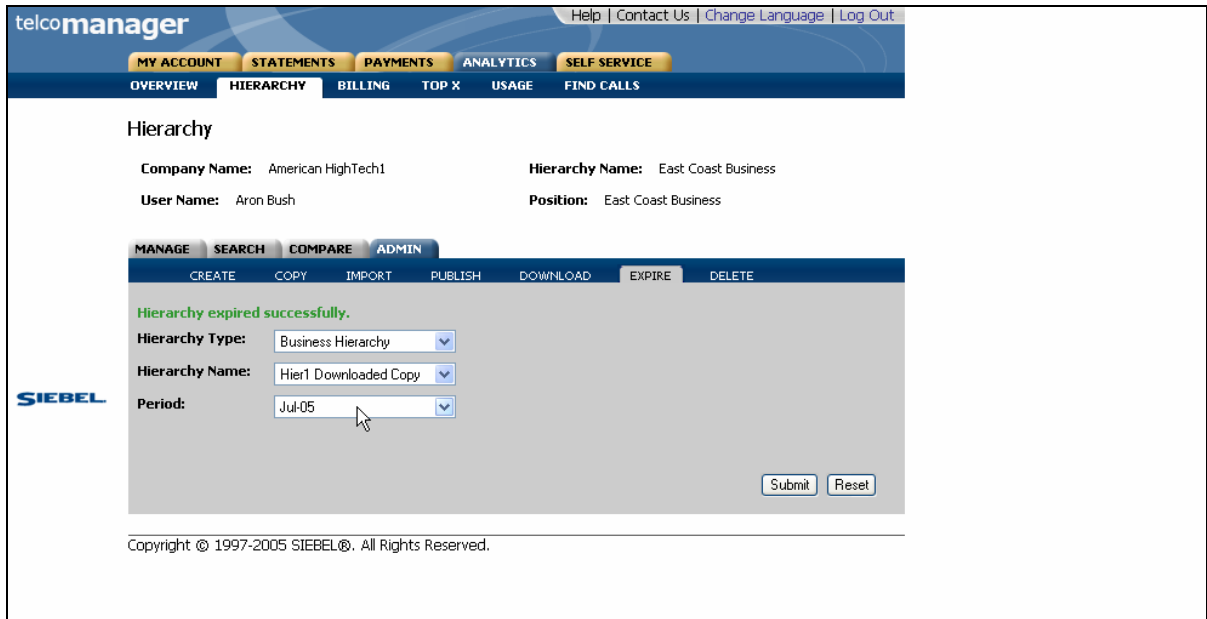
Figure 45- Expire Hierarchy Step 2: Success Page

Delete Hierarchy

Name:	**Delete Hierarchy**
Brief Description:	Describes the mechanism whereby a user deletes a non-billing hierarchy.
Actors:	CSR, Admin, Manager
Entry Points	Admin Tab: Delete Sub-tab
Form Elements:	1. Delete Hierarchy Form Hierarchy Type [Required: Default: Current Context] Dropdown: [Consolidation, Organization] Hierarchy Name [Required: Default: Current Context] Dropdown: [Hierarchy Names stored in the system]
Main Path:	**1.** User selects Admin tab and Delete sub-tab **2.** System displays Delete Hierarchy Form. **3.** User specifies data for the hierarchy to be deleted and selects the Submit action. **4.** System returns a dialog box with the message: "Performing this Operation will permanently delete this hierarchy. Do you want to continue?" **5.** User selects the "OK" action. **6.** System deletes selected hierarchy and all nodes below it. **7.** System returns a success page stating: "The Hierarchy has been successfully deleted." **8.** Use case ends.
Alternate Paths:	**[A1]** User selects Cancel action: 1. System invokes **Cancel** use case. **[A2]** User selects Start Over action: 1. System invokes **Start Over** use case.
Exception Paths:	**[E1] User encounters a validation error:** 1. System invokes Validation Error Message use case. **[E2] User or CSR encounters a system error:** 1. System invokes Error Message use case.

Business Rules:	**[B1]**	Only non-billing hierarchies can be deleted.
	[B2]	Users assigned to deleted hierarchies are unassigned and will still appear elsewhere if assigned and will not be unassigned from accounts or services contained in group.
	[B3]	Accounts are unassigned from hierarchy deleted and are moved to unassigned status but maintain any user settings.
	[B4]	Services are unassigned from hierarchy deleted and are moved to unassigned status but maintain any user settings.
	[B5]	A user may only delete hierarchies that they are assigned to the root node and have the appropriate permissions.

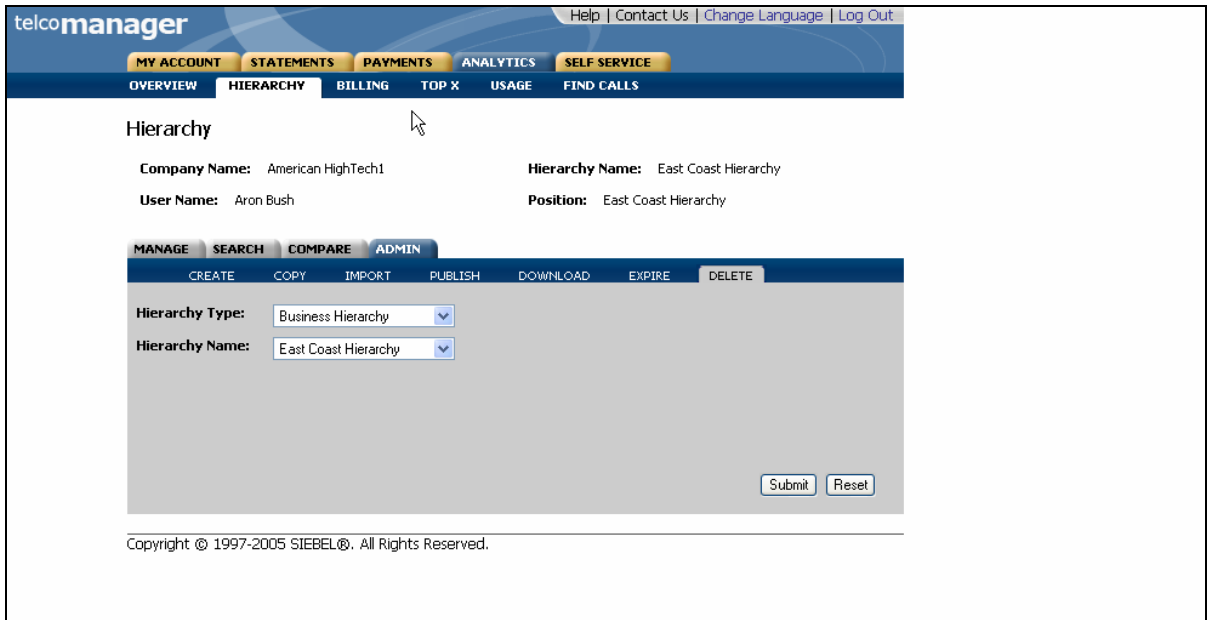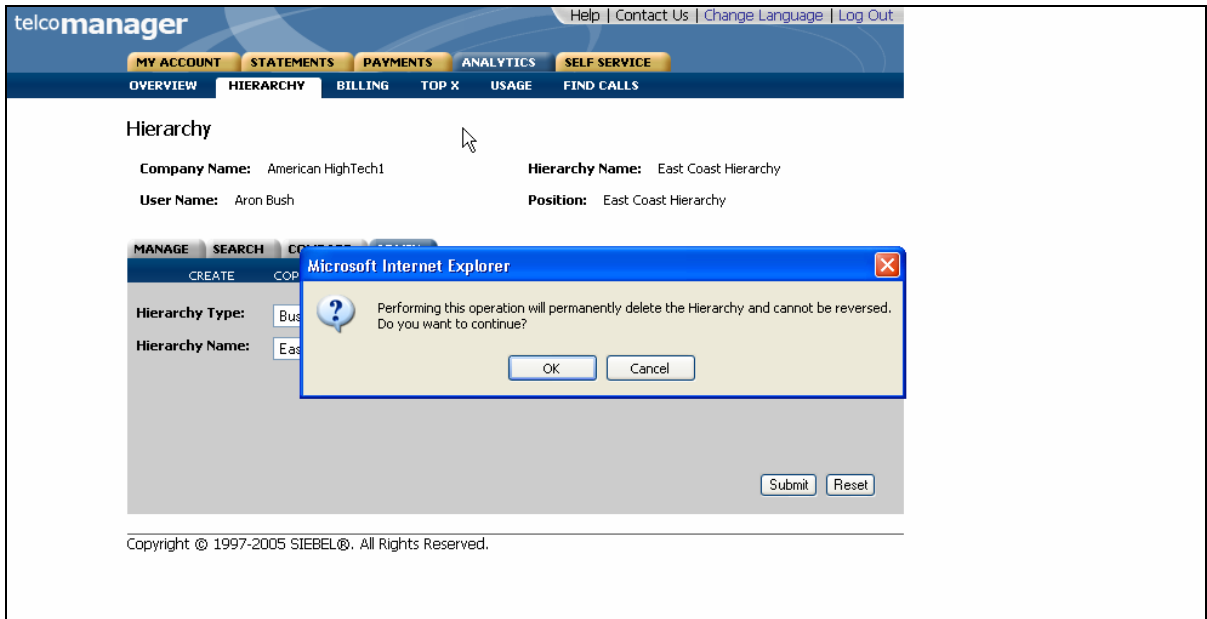Figure 46– Delete Hierarchy Step 1: Specify Parameters

Figure 47– Delete Hierarchy Step 2: Confirm Page

Figure 48– Delete Hierarchy Step 3: Delete Page

Version Hierarchy

Version Billing Hierarchies

Name:	**Version Billing Hierarchies**
Brief Description:	System saves the current form of the billing hierarchy. *Business Requirement: Provide a way to generate accurate trending reports.*
Actors:	System
Main Path:	1. System stores the current version and effective date of all billing hierarchies on the first day of the month at 12:00 AM. 2. System carries over the current version of all billing hierarchies to the new month.
Alternate Paths:	**[A1] Versioned hierarchy is purged:** 1. System invokes Purge use case.
Exception Paths:	**[E1] System encounters an error during versioning:** 1. System logs the error in the log file.
Business Rules:	**[B1]** Effective date is based upon the provider's reporting period. Reporting period is defaulted to one month. *Rationale: Service providers bill monthly.* In rare cases the bills are cut on a frequency other than monthly, the reporting period and effective dated hierarchies may be configured to match the provider's billing frequency. **[B2]** Effective date is 12:00 AM from the first of the month until 12:00 AM on the first of the next month.

Manage Versioned Hierarchy

Name:	**Manage Versioned Hierarchy**
Brief Description:	Describes the user interface for managing an effective dated hierarchy and behavior of associated actions.
Actors:	CSR, Admin, Manager
Entry Points	**1.** My Account Tab: Hierarchy Sub-Tab **2.** Manage Tab
Form Elements:	Top Pane: Hierarchy Search Criteria If there is no user specified default hierarchy type and hierarchy name, the system uses the first billing hierarchy in the hit list as the default 1. Hierarchy Type 2. Hierarchy Name 3. Period [Required: Default: Current Context or Current Month for start of session] Reporting period that corresponds 1:1 with billing cycles. Dropdown Options: [monthly, up to 12 months, configurable] 4. Element: 5. Status: 6. Attribute: 7. Keyword: 8. Radio buttons: [Default: From Current Location] Specifies the scope of the search, entire hierarchy or from the current position and below. Options: [Entire Hierarchy or From Current Location] 9. Instructional text: "Please select hierarchy criteria" *For more information regarding fields and their defaults, refer to Manage User Interface Use Case. Bottom Left Pane 1. New [Default: Select] Dropdown Options: [Groups] Bottom Right Pane: Details Sub-Tab * All fields are pre-populated with previously stored information. Bottom Right Pane: Elements Sub-Tab 1. Checkbox [header row] Selects all rows 2. Checkbox [row value] Selects the individual row 3. Results [number] Number of search results returned

	Bottom Right Pane: Move Sub-Tab 1. Checkbox [node] Selects all rows 2. Checkbox [child branch] Selects the individual branch *For more information regarding fields and their defaults, refer to Manage User Interface Use Case.
Report Content:	Results Fields For Element Groups Element Sub-tab **1.** Name (Display name of element type Groups) **2.** Position (The name of the hierarchy node one level above) Results Fields For Element Accounts Element Sub-tab **1.** Account No. (Display name of element type Accounts) **2.** Position (The name of the hierarchy node one level above) Results Fields For Element Services Element Sub-tab **1.** Number (Display name of element type Services) **2.** Position (The name of the hierarchy node one level above) Results Fields For Element Users in Element Sub-tab **1.** Name (Display name of element type User) **2.** Position (The name of the hierarchy node one level above)

Main Path:	**1.** User selects Manage tab.
	
	2. System returns a page displaying:
	
	    d. Top Pane: Hierarchy Search Criteria Form with current context and defaults.
	
	    e. Bottom Left Pane: Graphical view of current hierarchy tree opened to current position context.
	
	    f. Bottom Right Pane: Details tab containing the details for current hierarchy context.
	
	3. User specifies an alternate Period from the current period from the Period drop down box [B1]
	
	4. System determines query parameters based upon the specified hierarchy search criteria and redisplays page as follows:
	
	    d. Top Pane: Hierarchy Search Criteria Form with context updated by specified search criteria.
	
	    e. Bottom Left Pane: Graphical view of current hierarchy tree opened to current position context.
	
	    f. Bottom Right Pane: Elements tab containing the fields for specified element and status with the total count for the search result set.
	      (For field information, see Report Content section of this use case.)
	
	5. Use Case Ends.

Alternate Paths:	**[A1]** User enters search parameters for Attribute, and/or Keyword and selects the Submit action to refine search criteria and filter down the results:
	1. Rationale: Enable user to refine search by providing filters for the search and quickly select a position in the hierarchy.
	2. System searches the hierarchy tree returning a list of all nodes in the Elements sub-tab on the lower right pane that matches the search criteria showing the fields for specified element and status.
	[A2] User selects link of the display name in the Elements sub-tab:
	1. System returns the user to the Details sub-tab displaying attributes for the specified element type.
	[A3] User selects link of a position in the Elements sub-tab:
	1. System highlights the position of the selected item in the graphical view of the hierarchy.
	[A4] User expands and collapses the hierarchy branch by selecting on the arrow in the graphical view of the current hierarchy:
	1. System invokes **Collapse and Expand Hierarchy** use case.
	[A5] User selects New Group and the Submit action:
	1. System invokes **Create Group** use case.
	[A6] User selects Details sub tab:
	1. System returns the user to the Details sub-tab displaying attributes for the specified element type.
	[A7] User selects Delete or Remove action in the Details or Element sub-tabs:
	1. System invokes **Remove Element** use case.
	[A8] User modifies attributes in the Details sub-tab:
	1. System invokes **Modify Element Attributes** use case.
	[A9] User selects Add action in the Element sub -tab:
	1. System invokes **Add Element** use case.
	[A10] User selects column header links in the Element sub-tab:
	1. System invokes **Sorting** use case.
	[A11] User selects Move sub-tab:
	1. System invokes **Move Group** use case.
	[A12] User selects Reset action:
	1. System invokes **Reset** use case.
	[A13] User selects Cancel action:
	1. System invokes **Cancel** use case.
Exception Paths:	**[E1]** **User encounters a validation error:**
	1. System invokes Validation Error Message use case.
	[E2] **User encounters a system error:**
	1. System invokes Error Message use case.

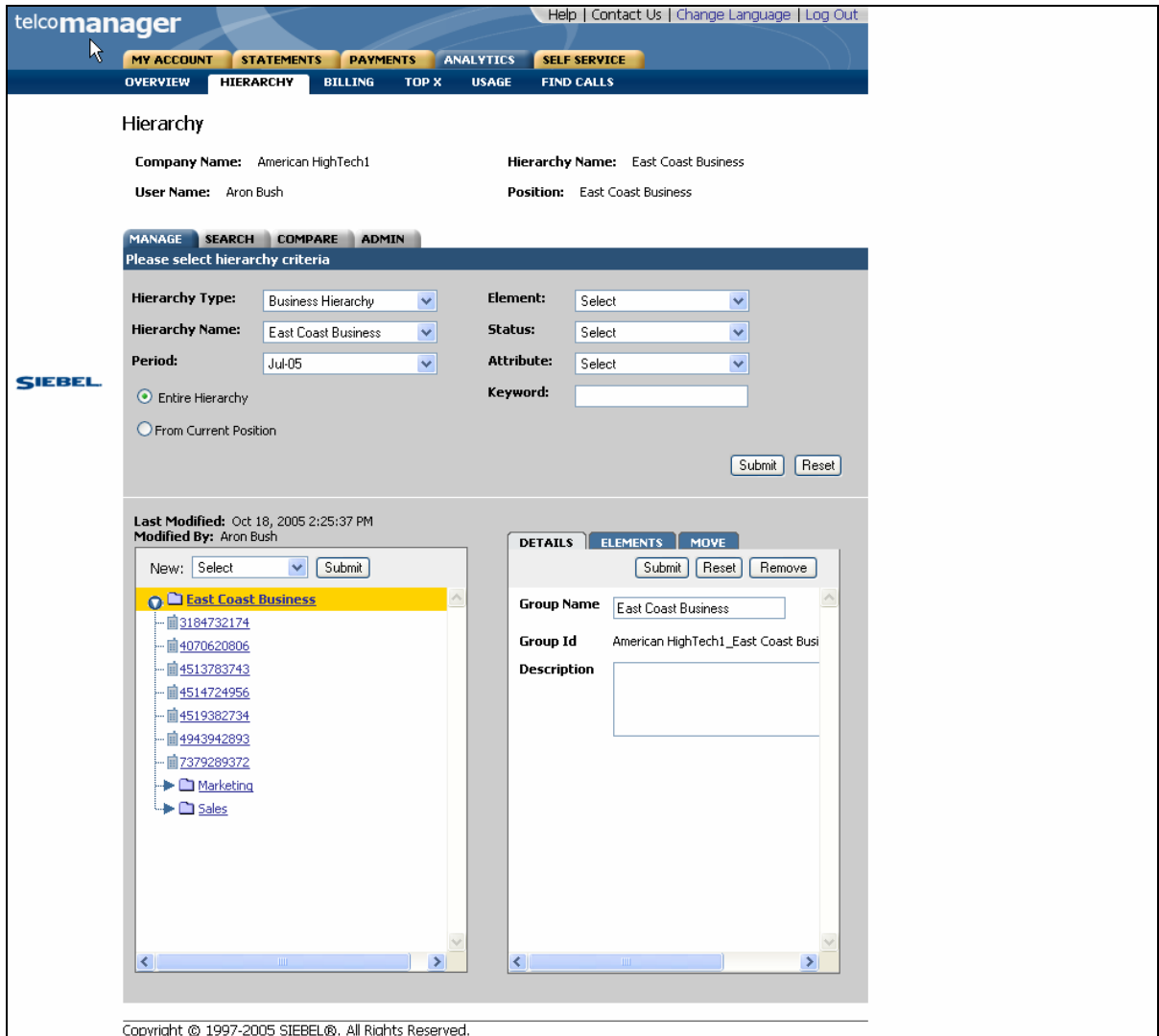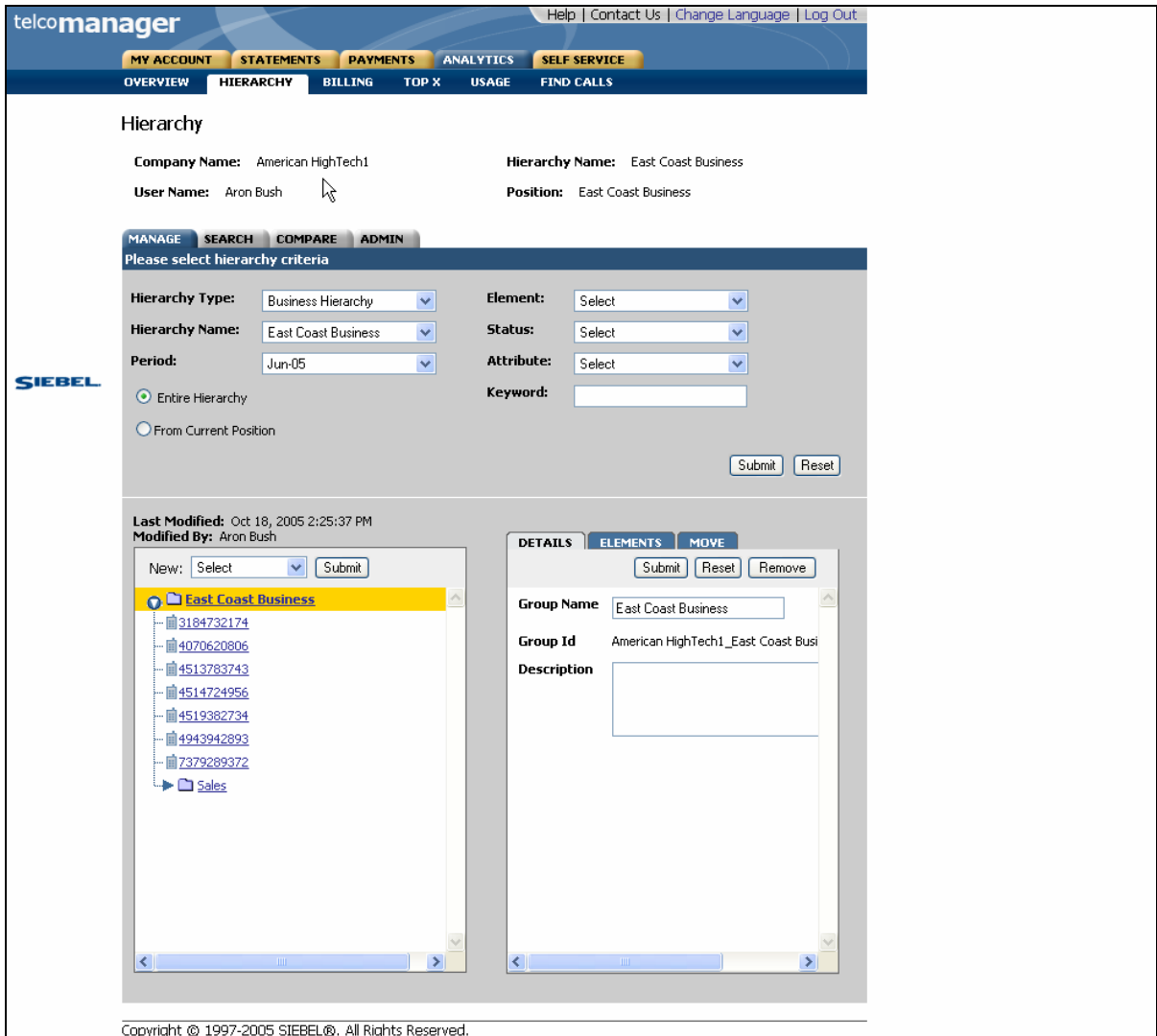|	
Business Rules:	**General** **[B1]** The manage hierarchy behavior is the same for a historical versioned hierarchy as it is for the current hierarchy. However any changes made to a historical hierarchy will only affect the specified current version of the hierarch. **[B2]** System persists the Hierarchy Type, Hierarchy Name, Period, and Position throughout the user's session until user otherwise changes it. **[B3]** Hierarchy Access Control: Users can only view hierarchies to which they have been assigned and positions at or below the positions to which they have been assigned. User can not view hierarchy nodes to which they have not been granted view access privileges **[B4]** Any unassigned companies, accounts, and services are attached on the top of the hierarchy. **[B5]** If user enters the Manage Tab with the hierarchy as the current position, the graphical view of the hierarchy contains the hierarchy as the top node and its nodes one level below it. **Top Pane: Hierarchy Search Criteria** **[B6]** If user selects the radio button for "Entire Hierarchy", the scope of the search is all the nodes in the hierarchy. **[B7]** If user selects the radio button for "From Current Position", the scope of the search is relative to and limited by the nodes below the current position. **Bottom Left Pane: Graphical View of Hierarchy** **[B8]** If the hierarchy is modified, the fields "Last Modified" and "Modified By" are updated. **[B9]** If a position is selected, the position is highlighted. Unless the arrow for the position is selected, the node will not expand or collapse. **[B10]** If a node is empty, there will be no arrow next to the node. **Bottom Right Pane: Details/Element/Move Sub-Tabs** **[B11]** If user selects the checkbox in the row of the column headers of the search results, all items of the search results become selected. **[B12]** If Element is unassigned, it can be added to the hierarchy. If element is assigned, it can be removed or deleted from the hierarchy. **[B13]** If Element is Group, Delete action is available. For all other elements, Remove action is available. **[B14]** If text field box exists, the attribute is editable. **[B15]** Results field for the search criteria specified is updated according to action performed.
Notes:	A Cost Center is a type of Group element.
Questions:	None

Figure 49 – Current Period Manage Hierarchy

Figure 50 – Previous Period [Historical Version] Manage Hierarchy

Compare Versioned Hierarchy

Name:	**Compare Versioned Hierarchy < Initial Design for Review >**
Brief Description:	User finds a particular group, account, services, and/or attributes for any node or leaf within a hierarchy.
Actors:	CSR, Admin, Manager
Entry Points	1. Compare Tab
Form Elements:	**Hierarchy Search Criteria** If there is no user specified default hierarchy type and hierarchy name, the system uses the first billing hierarchy in the hit list as the default 1. Hierarchy Type 2. Hierarchy Name 3. Period 1: [Specifies hierarchy version to be displayed in lower left pane] [Default: Current Period] 4. Period 2: [Specifies hierarchy version to be displayed in lower right pane] [Default: Current Period] 5. Element [Inactive] 6. Status [Inactive] 7. Attribute [Inactive] 8. Keyword [Inactive] 9. Radio buttons: [Inactive] *For more information regarding fields and their defaults, refer to Manage User Interface Use Case.
Report Content:	Search Results Fields For Element Groups *For more information regarding fields and their defaults, refer to Manage User Interface Use Case. Search Results Fields For Element Accounts *For more information regarding fields and their defaults, refer to Manage User Interface Use Case. Search Results Fields For Element Services *For more information regarding fields and their defaults, refer to Manage User Interface Use Case. Search Results Fields For Element Users 1. *For more information regarding fields and their defaults, refer to Manage User Interface Use Case.
Main Path:	1. User selects Compare tab. 2. System returns a page displaying: Display with Hierarchy Type, Hierarchy Name and Period 3. User specifies a Hierarchy Name and an alternate for Period 1 and/or for Period 2 from the current period from the Period drop down box

	[B1]
	4. System determines query parameters based upon the specified hierarchy search criteria and redisplays page as follows:
	g. Top Pane: Hierarchy Search Criteria Form with context updated by specified search criteria.
	h. Bottom Left Pane: Graphical view of current hierarchy tree opened to Period 1 context.
	i. Bottom Right Pane: Graphical view of current hierarchy tree opened to Period 2 context.
	5. Use Case Ends.

Alternate Paths:	**[A1]** User selects one or more checkboxes and selects the Submit action:
	
	1. System returns the user to the Manage tab displaying:
	
	    i. Top pane: Hierarchy Search Criteria with specified search criteria context.
	
	    ii. Bottom Left Pane: Graphical view of current hierarchy tree opened to current position context.
	
	    iii. Bottom Right Pane: Elements tab containing the display name and position of the selected element.
	
	[A2] User selects link of the display name of the specified element type for the search criteria:
	
	1. System returns the user to the Manage tab displaying:
	
	    i. Top pane: Hierarchy Search Criteria with specified search criteria context.
	
	    ii. Bottom Left Pane: Graphical view of current hierarchy tree opened to where the element selected is located in the tree in the bottom left pane.
	
	    iii. Bottom Right Pane: Details tab containing the details for the selected element.

Exception Paths:	**[E1] User encounters a validation error:** 1. System invokes Validation Error Message use case. **[E2]** User encounters a system error: 1. System invokes Error Message use case.
Business Rules:	**General** **[B1]** The manage hierarchy behavior is the same for a historical versioned hierarchy as it is for the current hierarchy. However any changes made to a historical hierarchy will also affect all versions of the hierarchy forward up to and including the current hierarchy. **[B2]** System persists the Hierarchy Type, Hierarchy Name, Period, and Position throughout the user's session until user otherwise changes it. **[B3]** Hierarchy Access Control: Users can only view hierarchies to which they have been assigned and positions at or below the positions to which they have been assigned. User can not view hierarchy nodes to which they have not been granted view access privileges **[B4]** Any unassigned users, accounts, and services are attached on the top of the hierarchy. **[B5]** If user enters the Manage Tab with the hierarchy as the current position, the graphical view of the hierarchy contains the hierarchy as the top node and its nodes one level below it. **Top Pane: Hierarchy Search Criteria** **[B6]** "Set as Default Hierarchy", is inactive **[B7]** Display Unassigned in Hierarchy", is inactive **[B8]** "Entire Hierarchy", is inactive

[B9] "From Current Position", is inactive

Bottom Left Pane: Graphical View of Hierarchy Period 1

[B10] If the hierarchy is modified, the fields "Last Modified" and "Modified By" are updated.

[B11] If a position is selected, the position is highlighted. Unless the arrow for the position is selected, the node will not expand or collapse.

[B12] If a node is empty, there will be no arrow next to the node.

Bottom Right Pane: Graphical View of Hierarchy Period 2

[B13] If the hierarchy is modified, the fields "Last Modified" and "Modified By" are updated.

[B14] If a position is selected, the position is highlighted. Unless the arrow for the position is selected, the node will not expand or collapse.

[B15] If a node is empty, there will be no arrow next to the node.

Figure 51 – Compare Effective Dated Hierarchies

User Interface

Compatibility Requirements (Updated)

This section outlines requirements for the User Interface (UI) of the system. The solution will be compatible for the following Windows based browsers:

IE 6.X and above

Netscape 7.2 and above

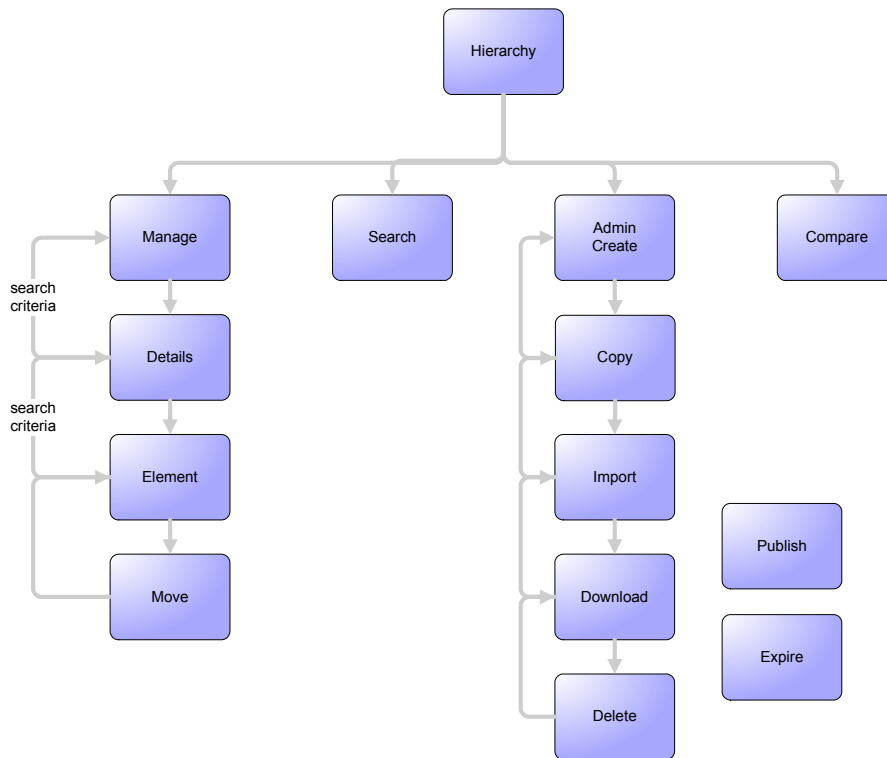Firefox 0.9

Hierarchy Site Map

Figure 52 – Hierarchy Site Map

APPENDIX A – GLOSSARY OF TERMS

TERM	DEFINITION
Account	The payment agreement between a service provider and a customer. An account may contain one or more contracts (a.k.a. Billing Account)
Business Rule	Description of a decision made during a business process. May describe the behavior of the application.
Consolidation	The process of presenting a customer with information from multiple account invoices for a single company or organization.
Contract	Defines the usage plan, features, and device for a specific phone number.
Cost Center	A business structure used to allocate expenses and usage. A typical business structure is comprised of a hierarchical tree of cost centers. Each cost center may be defined as, but not limited to a company, location, department, or region used for organizational spending reports.
Customer	The consumer of the service from a provider. Customers can either be individuals (B2C) or small, medium, and large businesses (B2B).
Document	A single statement or set of account data from an input data source. The input data source may consist of many individual documents. Document content roughly corresponds to data typically provided to customers in print form on the web.
Hierarchy	A node tree with a single root node, intermediate nodes, and leaf nodes. The hierarchy tree may be used to consolidate several accounts into a single billing hierarchy or provide an organizational structure consisting of cost centers for organizational spending reports.
Invoice	A statement of charges and service usage provided to a customer by the service provider. Used to inform the customer credits, debits, and the amount due for an account
Message	A relatively small set of information that is delivered via the web or email message to user. Can be synonymous to notification and alert.
Module	1) Self-contained collections of code, scripts, and configuration information that is functionally coherent. They need not be self-contained, but inter-module dependencies must be defined and managed. 2) A large grained software structure. The software architecture can be described in terms of modules and their interaction.
User	1) A user is an enrolled customer with a unique login name, password, and individually assigned and managed permissions. 2) In a hierarchy, a user is typically assigned to a node.