Budgeting for Systems Administrators

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Who Are We?

- Greg is the Vice President of Bioinformatics at GPC AG, a biotech firm in Princeton, NJ and Munich, Germany
- Greg couldn't make it today

Who Are We?

- Adam is the Manager of Computing Systems at LION Bioscience Research, in Cambridge, MA and Heidelberg, Germany

Why Are We Here?

- We worked together at a small genetics firm in Waltham, MA
- We had the same positions as we do now
- Together we built a budget

What Is a Budget?

What Is a Budget?

- A planning tool
  - What we're going to do next year
    - And why we need to do it
  - How much it's going to cost to do it
  - What to expect in future years

What Is a Budget? (2)

- A planning tool
- A way to get money
  - But not necessarily the only way

What Is a Budget? (3)

- A planning tool
- A way to get money
- An instrument to foster discussion
  - Most often in well-funded research environments
    - Interval Research Corp: "Tell a good story, you can have the money"

What Is a Budget? (4)

- More discussion:
    - Is everyone "on the same page?"
    - "The idea is good, but it will cost 5x what you thought – do you still want do to it?"

Overview

- What should be in a budget?
- How do you know how much you'll spend?
- How do you get your budget approved?

What's In a Budget?

What's In a Budget?

- Hardware
- Software
- People

- Services
- Consumables
- Slush fund

What's In a Budget?

- Hardware
  - Computers
  - Networks
  - Data storage
  - "Furniture"
  - Buildings
  - Cables, etc.
- Software
- People

- Services
- Consumables
- Slush fund

What's In a Budget?

- Hardware
- Software
  - Licenses
  - Media
  - Documentation
- People

- Services
- Consumables
- Slush fund

What's In a Budget?

- Hardware
- Software
- People
  - Employees
  - Consultants
  - Contractors
  - Professional Development

- Services
- Consumables
- Slush fund

What's In a Budget?

- Hardware
- Software
- People

- Services
  - Maintenance contracts
  - Consulting services
- Consumables
- Slush fund

What's In a Budget?

- Hardware
- Software
- People

- Services
- Consumables
  - Printing supplies
  - Magnetic media
- Slush fund

What's In a Budget?

- Hardware
- Software
- People
- Services
- Consumables

- Slush fund
  - Pay-offs
  - Caribbean vacations
  - The stuff you forgot
  - The stuff they didn't tell you about

Hardware

- Two kinds of expenditures:
  - Capital
  - Expensed

Hardware (2)

- Two kinds of expenditures:
    - Capital:
        - "Durable goods"
        - Over some minimum cost
            - Set by your accounting department
        - Depreciated over a fixed period of time

Hardware (3)

- Two kinds of expenditures:
  - Capital
  - Expensed:
    - Services
    - Software (sometimes)
    - Total amount is considered in the current tax year

Hardware (4)

- Two kinds of expenditures:
  - Capital
  - Expensed
- This matters to the bean counters
- We may have to use different forms, or go through a different approval process

"Bean Counters"

- The folks in the accounting department can be your friends or your enemies – it's your choice

"Bean Counters" (2)

- They can help you:
  - Achieve the right level of detail when preparing your budget
  - Keep track of your budget
  - Get historical budget/spending data
  - Find assets

Hardware (5)

- New equipment
- Upgrades

Hardware (6)

- New equipment

- Upgrades
    - Beware: Tax rules on capital equipment may make it difficult (or impossible) to trade-in existing machines as part of an upgrade

Hardware (7)

- New equipment

- Upgrades

  - Another gotcha: Capital equipment may be financed by an outside source; if so, you don't really own it, so you may not be able to trade it in for an upgrade!

Hardware (8)

- Obvious stuff
- Furniture
- Buildings
- Big stuff
- Small stuff

Hardware (9)

- Obvious stuff:
  - Systems, network gear, printers, tape drives and libraries, console servers, access servers, etc.

Hardware (10)

- Furniture:
    - Racks and cabinets
    - Cable trays (in computer room)
    - "Operator stations" (in computer room)
    - Storage units (media, supplies)
    - Chairs, step-ladders, lighting, etc.

Hardware (11)

- Buildings:
    - You may need a new building to house your new computer room
        - most likely, only part of this goes into your budget
    - You may need to build a new computer room in an existing building

Hardware (12)

- Big stuff:
    - Air conditioners
    - UPSes
    - Generators

Hardware (13)

- Little stuff:
  - Cables
    - Some people consider these consumables
  - Tools
  - Test equipment
    - Sometimes not so little

Software

- Licenses
- Media
- Documentation
- Subscriptions

Software (2)

- Licenses
  - Site-wide
  - Per-user

Software (3)

- Media
  - New packages
  - Upgrades (if not included in support contract)

Software (4)

- Documentation
    - New packages
    - Upgrades (if not included in support contract)
    - Printed (in addition to CDs)

Software (5)

- Subscriptions
  - More of an access fee than a support contract
  - The accounting folks may want these handled differently

People

People

- Employees

People (2)

- Employees
- Consultants / contractors:
  - May have to be considered in "head count," too

People (3)

- Employees

- Consultants / contractors:
  - Expensive, but management may view these as "different dollars"
  - Often seen as lower-risk in the budget (since they're not permanent)

People (4)

- Employees
- Consultants / contractors
- Professional development:
    - Conferences
    - Training
    - Off-site meetings, retreats

Services

Services

- Support contracts

- Consulting services

- One-time services

- Off-site storage (for back-ups)

- Legal fees

- Escrow

Services (2)

- Support contracts
  - New contracts on hardware or software on which the warranty will run out during the coming fiscal year
  - May need to pro-rate contract cost to match fiscal year
  - Ask your vendor to align contract dates to save headaches

Services (3)

- Support contracts
  - Contracts that expire during the coming fiscal year
  - May cost more because the equipment is older
  - Again, may have to pro-rate

Services (4)

- One-time services:
    - Hardware maintenance not covered by a service contract
    - Yearly service for tape drives, air conditioners, UPSes, generators, etc.
    - Rates probably go up every year

Consumables

Consumables

- Media (tapes, CDs)
- Printing supplies (toner cartridges, ink cartridges, paper)
- Cables?
- Cleaning supplies (for tape drives)

Slush Fund

Slush Fund

- The name is a joke, but the idea isn't
- Need some sort of contingency fund
    - May not be necessary if out-of-budget expenses are easily approved
    - Still worth having to cover little emergencies

Slush Fund (2)

- May be able to list as its own budget item
- Or, may have to hide it by padding other items
  - Just remember where you hid the money!

Slush Fund (3)

- Be reasonable:
    - You're trying to plan for uncertainty, not subvert policy

Overview

- What should be in a budget?
- **How do you know how much you'll spend?**
- How do you get your budget approved?

How Much Money?

- More than last year?

- Less?

- About the same?

How Much Money? (2)

- Company policies may affect the answer

- For example:
  - Does every new employee get a computer? If so, who pays for it?
  - Do you archive old data or buy more disks?

How Much Money? (3)

- The company's business plan will also affect the answer
  - But it could be up **OR** down

How Much Money? (4)

- There's no formula

- This is where the planning really happens

- You need to talk to users, your boss, department heads, VPs, directors, and maybe even the president, CEO, and/or CFO

How Much Money? (5)

- You may need to ask your boss to talk to these people

- Or, maybe you ask him/her to do the talking, but to let you attend the meeting

Talking to "Suits"

- They're **NOT** stupid
    - But they probably don't understand technology
- Don't waste their time (or yours) with technical details
- Stick to high-level overviews of business plans, etc.

Talking to "Suits" (2)

- Potential questions:
  - How many new employees?
  - New projects?
  - Old projects going away?
  - Major equipment upgrades?

How Much Money? (6)

- Computers for employees?
  - General productivity
  - Project-specific use

How Much Money? (7)

- Computers for employees?
  - General productivity:
    - Email
    - Word processing
    - Web browsing
    - Presentations

How Much Money? (8)

- Computers for employees?
  - Project-specific use:
    - Development
    - Run applications

How Much Money? (9)

- Computers for employees?
    - General productivity
    - Project-specific use
    - Sometimes the same computer, but not always

How Much Money? (10)

- Computers for employees?
- If multiple machines:
  - General productivity
    - Maybe paid for by the employee's department
    - Maybe by the "computer department"
  - If the latter, you need to know how many new employees

How Much Money? (11)

- Computers for employees?
- If multiple machines:
  - General productivity
  - Project-specific use
    - Almost always paid for by the department that "owns" the project

How Much Money? (12)

- Questions to ask:
  - Enough disk space for "personal" use?
  - Enough "project" disk space?
  - Enough disk server bandwidth?
  - Enough back-up capacity?

How Much Money? (13)

- Questions to ask:
  - Enough desktop machines?
  - Enough computing servers?
  - Enough network servers?
    - Web email, DNS, etc.

How Much Money? (14)

- Questions to ask:
    - Enough network ports?
    - Enough network bandwidth?
    - Enough Internet bandwidth?

How Much Money? (15)

- Questions to ask:
    - Enough printers?
        - Location, purpose
    - Enough printing "capacity"?
        - Duty cycle

Building a Budget

- Start by listing ALL items "depth first"
  - Sort by category, vendor, whatever
  - Write down EVERYTHING

Building a Budget (2)

- Next, sort by reason
  - Specific projects
    - "The suits" can tell you what these will be
    - These are the easiest to justify

Building a Budget (3)

- Next, sort by reason
  - Specific projects
    - Get support from the project manager in advance
    - Let him/her do most of the work justifying the expense
    - Maybe put your expenses in his/her budget, then transfer them back to yours

Building a Budget (4)

- Next, sort by reason
  - Growth
    - Again, get numbers from the suits
    - Be ready to explain why half the proposed growth may require more than half the proposed cost

Building a Budget (5)

- Next, sort by reason
  - General infrastructure
    - Try to tie as much of this as possible to specific projects and growth
    - Try to justify the remaining amount as "needed to support the projects and growth, but the cost is spread across everything"

Building a Budget (6)

- Next, sort by reason
  - "Breathing room"
    - Usually requires extra justification
    - Might be able to use the "cheaper in bulk" argument
    - Make sure you can reduce this without crippling your plans

Building a Budget (7)

- Sometimes both lists may need to be presented as part of the budget

Overview

- What should be in a budget?
- How do you know how much you'll spend?
- **How do you get your budget approved?**

Getting Your Money

- Why budget?
- More "what's in a budget?"
- Packaging your budget
- Presenting your budget

Getting Your Money (2)

- Why budget?
  - It's your job
    - You're the manager
    - Your manager asked for help

Getting Your Money (3)

- Why budget?
  - If you don't do it, someone else will do it for (to?) you
    - You probably won't like theirs as much
    - You may not get to do the things you need to do – or want to do

Getting Your Money (4)

- Why budget?
  - It forces you to plan
    - Longer term
  - Planning is good
  - Acting is much better than reacting

Getting Your Money (5)

- Why budget?
  - Budgets make purchases easier
  - Budgets reduce arguments about purchases
  - Budgets make it easier to win arguments

Getting Your Money (6)

- Why budget?
- More of "what's in a budget?"
- Packaging your budget
- Presenting your budget

More "What's In . . . ?"

- Why do we need this?
- How does it affect the bottom line?
- How does this fit into the longer-term picture?
- How does this affect the following year?

More "What's In . . . ?"

- Why do we need this?
  - Required by a project
  - Required to support employees
  - Required to support the company
  - Infrastructure

More "What's In . . . ?"

- How does it affect the bottom line?
  - Necessary expense?
  - Reduce overall costs?
  - Generate revenue?

More "What's In . . . ?"

- How does this fit into the longer-term picture?
  - Planning for expansion?

More "What's In . . . ?"

- How does this affect the following year?
  - One-time expense?
  - Once every N years?
  - Cheaper today than tomorrow?
  - Cheaper in bulk?

Getting Your Money (7)

- Why budget?
- More of "what's in a budget?"
- **Packaging your budget**
- Presenting your budget

Packaging Your Budget

- We tend to think in terms of machines or maybe purchase orders
- Management prefers to think in terms of projects
- Do it their way

Packaging . . . (2)

- Typical purchase order:

  2   WhizBang 450 Servers

  3   256MB memory modules

  3   DLT VII tape drives

  30   18GB Fibre-Channel disks

  2   FC host adapters

Packaging . . . (3)

- Management presentation:
  - Lab system: WhizBang 450, 256MB memory, tape back-up, 90GB storage
  - Production system: WhizBang 450, 512MB memory, dual tape back-up, 180GB storage

Packaging . . . (4)

- If it makes sense, centralize functionality:
  - Lab system: WhizBang 450
  - Production system: WhizBang 450
  - Storage system: Elephant D2700 with 270GB storage, multiple tape back-up units

Packaging . . . (5)

- If it makes sense, centralize functionality

- But . . .

- Be prepared to have only one approved

Packaging . . . (6)

- An "all or nothing" approach may get you nothing

- Categorize items:
  - Vital
  - Important
  - Nice to have

Packaging . . . (7)

- Build in "slash points" between categories
- Make sure you know how much you need if one of the categories isn't approved

Packaging . . . (8)

- Sometimes items in one category depend on items in another
  - Be prepared to juggle costs if that item is cut
  - Don't surrender the "extra" money; save it for when they ask for cuts

Getting Your Money (8)

- Why budget?
- More of "what's in a budget?"
- Packaging your budget
- **Presenting your budget**

Presenting Your Budget

- Align vital items with vital projects
- Get help from the project manager when presenting your budget

Presenting . . . (2)

- Present your budget with your categories (vital, important, nice) implied
    - But don't be to obvious about it
- Mount your defenses at the lines and not within a category

Presenting . . . (3)

- Separate new items from ongoing support costs

Presenting . . . (4)

- Separate new items from ongoing support costs
  - Tie to specific projects
  - Or show projected profit
  - Otherwise, present as opportunities for significant improvements

Presenting . . . (5)

- Separate new items from ongoing support costs
  - Present these as matter-of fact needs
  - "The cost of doing business"
  - Do this with as little fanfare as possible

Presenting . . . (6)

- We're ignoring how to justify the size of the staff
    - It's a hard problem
    - With lots of questions, and very few answers

Presenting . . . (7)

- If they say you have to cut your budget, do so willingly and creatively:
  - You'll like your own cuts better than theirs
  - You'll get credit for being a team player

Presenting . . . (8)

- If they say you have to cut your budget, do so willingly and creatively:
    - Cut decisively where you can and "trade" for the important stuff
    - Use your built-in slash points

More "Talking to Suits"

- Again, they may not be technical, but that doesn't mean they're stupid

- Become a teacher: Help them to understand why they should spend the money

- Don't be condescending!

More "Talking . . ." (2)

- Don't use buzzwords!
  - They don't impress; instead, they intimidate

More "Talking . . ." (3)

- Don't become aggravated if they need it explained several times
  - You probably know as much about their field as they do about yours
    - Which is probably damned little!

More "Talking . . ." (4)

- Managers don't care how the technology works
  - They don't need to care!
- Managers do care about the *implications* of the technology

More "Talking . . ." (5)

- Try to remember:
    - It's their job to control costs
    - There are important yet conflicting needs
    - It's also their job to balance these needs
    - They have to keep the company in business

More "Talking . . ." (6)

- Also remember:
  - If you can't see the connection to the bottom line, *neither can they!*

More "Talking . . ." (7)

- If you don't get your money, don't pout!
  - Losing this battle with grace may help win a later war

Summary

Summary

- Budgets are a lot of work
  - But they're necessary work

Summary (2)

- A budget will help you make better decisions throughout the year
- This in turn helps you:
    - Gain credibility
    - Get a better performance evaluation

Summary (3)

- Preparing your first budget is always the hardest
  - Maybe even a few orders of magnitude harder!
    - Actually, writing about how to prepare a budget is the hardest thing of all
      - Don't try to do it yourself; instead, just "steal" these notes ☺

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