

Cost Justification

COST JUSTIFICATION

Historically, IS managers have been increasing network staffing and budgets due to the explosive growth of network-attached workstations and user support requirements. The downsizing of mainframes, reengineering of corporate America, and tighter budgets of this decade have since pressured corporate IS to contain the costs of these rightsized/upsized internetworks.

While ease of use is now a theme of enterprise NOSs and application software, ease of administration has only recently become a main focus. By supplying GUI-based NDS tools with NetWare 4.1, Novell has made significant strides in reducing administration costs. Drag-and-drop, object copy/paste, and search-and-replace all reduce administration time and therefore administration cost — to the point of reducing staff when enough time is freed.

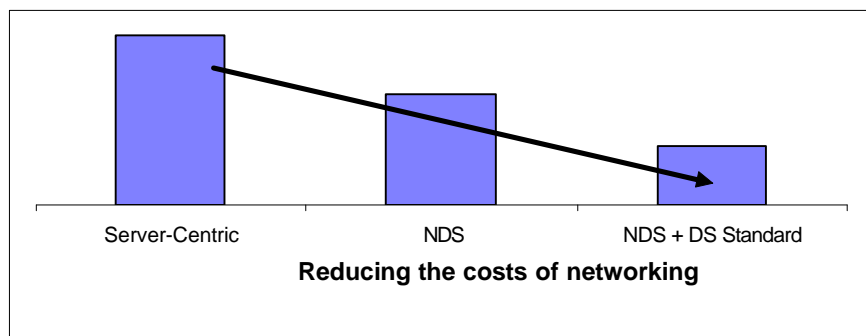
The NetWare 4 nonserver-centric NDS lets network managers centrally administer users and access rights. And because you do not need to modify several servers when adding or deleting network users, NDS reduces administration time and costs.

Cost Benefits of DS Standard NDS Manager:

- ◆ **Reduces network administration time and staff expense**
 - ◆ **Increases system availability**
 - ◆ **Helps optimize network resources**
 - ◆ **Reduces risk of security breach**
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REDUCING THE COSTS OF NETWORKING

With the release of NetWare 4 and NDS, Novell has significantly reduced the costs of networking. The NetWare 4 architecture builds on the success of NetWare 3 and provides companies with the enterprise capabilities of NDS. By moving to the network-centric approach of NDS, the costs of owning a network are dramatically reduced. Network managers can further reduce their networking costs by using DS Standard NDS Manager.



DS Standard's off-line NDS management paradigm complements NetWare 4 by further reducing the administrative costs of NDS. DS Standard is cost-effective and valuable, especially if you are planning

to migrate to NetWare 4, merge a new NDS tree to your existing NDS, or re-optimize NDS even at the department level.

Note: In the sections that follow, we include sample cost savings based upon a variety of baseline network sizes. Choose the network that most closely represents your own to determine a sample cost savings. A small network has 2 servers with 50 users; a medium network has 5 servers with 500 users; and a large network has 15 servers and over 1,000 users.

REDUCED HIDDEN COSTS

DS STANDARD MAXIMIZES STAFF EFFICIENCY TO REDUCE OVERALL ADMINISTRATIVE COSTS

Industry analysts and researchers calculate that nearly 75% of network ownership costs are nontechnology costs (source: Gartner Group, 2/94). Network and IS managers are now focusing their efforts on reducing the hidden "soft" costs of running the network, since the potential cost savings from more efficient network operation and administration far outweigh the savings obtained from reducing network hardware requirements.

Staffing costs are the single largest cost element of operating distributed enterprise networks. DS Standard NDS Manager decreases the time required to administer the NetWare 4.1 NDS database, thereby reducing your overall staffing costs by:

Reduced keystrokes — Built-in search-and-replace functions let network managers make changes that affect multiple objects without editing them individually. By using DS Standard's templating capabilities, network managers can create and modify objects based upon previously defined (tested and standardized) objects.

Decreased overtime — To avoid potential network service interruptions when using on-line tools such as NWAdmin, network managers will often modify and maintain the NDS database at night. DS Standard reduces after-hours work by allowing daytime modeling and administration of all changes and a simple one-step after-hours update.

Reduced NDS learning curve — DS Standard comes with computer-aided NDS expertise that will help to reduce the NDS learning curve for network managers. The Assistant includes reference information and case studies that make ongoing management as well as one-time migrations easier and faster.

Combined expertise — Departmental or divisional administrators implementing wide-scale changes to a large network can combine resources, modeling changes to the network collaboratively while keeping and updating a centrally located master copy.

Unlike the traditional server-centric approach to server administration, NDS provides a single point of administration to the entire network. This significantly reduces the costs and time required to manage resources such as users, groups, and printers. To further reduce NDS administration costs, Novell and PSI co-developed DS Standard. Using DS Standard, network managers can reduce the hidden costs of networking by making mass changes, reducing data entry, and quickly re-using any object or portions of an existing tree.

Estimated Hidden Cost Savings: One-Time Changes

Network	NDS Changes		Minutes Ea.		Hours/Year		Admin. Savings		Admin. Salary	Savings Overall		Savings Per User	
	Freq.	Yearly	NW	DS	NW	DS	Time	Per Chg.		1 Year	3 Years	1 Year	3 Years
Small	1/wk.	52	5.0	4.0	4.3	3.5	20%	\$0.32	\$35,000	\$17	\$53	\$0.83	\$2.63
Medium	2/day	520	6.0	4.0	52.0	34.7	33%	\$0.82	\$45,000	\$429	\$1,351	\$1.71	\$5.40
Large	10/day	2600	7.0	4.0	303.3	173.3	43%	\$1.65	\$60,000	\$4,286	\$13,511	\$4.29	\$13.51

Assumptions: Changes = the number of modifications made to one object (such as a user, printer, or group) at a time, using the Template capability; assume 95% accuracy on entirely manual versus programmed changes; as networks grow, administrative time increases in complexity, as does administrative salaries; administrative salary for the first year increases 5% annually (compounded) (260 work days/year).

Estimated Hidden Cost Savings: Mass Changes

Network	NDS Changes		Hours Req'd		Hours/Year		Admin. Savings		Admin. Salary	Savings Overall		Savings Per User	
	Freq.	Yearly	NW	DS	NW	DS	Time	Per Chg.		1 Year	3 Years	1 Year	3 Years
Small	1/mo.	12	2.0	0.5	24.0	6.0	75%	\$28.85	\$35,000	\$346	\$1,091	\$17.31	\$54.56
Medium	2/mo.	24	3.5	0.5	84.0	12.0	86%	\$74.18	\$45,000	\$1,780	\$5,612	\$7.12	\$22.45
Large	1/wk.	52	5.0	0.5	260.0	26.0	90%	\$148.35	\$60,000	\$7,714	\$24,319	\$7.71	\$24.32

Assumptions: Changes = the number of modifications made to 10 or more objects at the network and user level, using global search-and-replace capabilities; based upon experience and customer testimonials, these changes without DS Standard range from 1 to 10 hours, depending upon the environment (one reference user of DS Standard saved over 12 hours on a single change); assumes 95% accuracy on entirely manual versus programmed changes; as networks grow, administrative time increases in complexity, as does administrative salaries; administrative salary for the first year increases 5% annually (compounded).

Estimated Hidden Cost Savings: Department and Division Re-Org

Network	Org. Changes		Hours Each		Hours/Year		Admin. Savings		Admin. Salary	Savings Overall		Savings Per-User	
	Freq.	Yearly	NW	DS	NW	DS	Time	Per Chg.		1 Year	3 Years	1 Year	3 Years
Small	1/yr	1	6.0	0.5	6.0	0.5	92%	\$105.77	\$35,000	\$106	\$333	\$5.29	\$16.67
Medium	2/yr	2	7.0	1.0	14.0	2.0	86%	\$148.35	\$45,000	\$297	\$935	\$1.19	\$3.74
Large	6/yr	6	10.0	1.5	60.0	9.0	85%	\$280.22	\$60,000	\$1,681	\$5,300	\$1.68	\$5.30

Assumptions: Changes = the number of departmental and divisional level modifications made in a one-year period, using the template and pruning capabilities to make multiple mass changes and multiple tree structure changes; assumes 95% accuracy on entirely manual versus programmed changes; as networks grow, administrative time increases in complexity, as does administrative salaries; administrative salary for the first year increases 5% annually (compounded).

REDUCED DOWNTIME COSTS

REDUCING PRODUCTIVITY AND REVENUE LOSSES

As networks become increasingly mission-critical, the costs of network downtime (from the perspective of both salary and lost business opportunities) increases in lock-step. More dramatically, as a growing number of users connect remotely to the network — from home and while on the road, in different time zones and countries — network resources must remain available even during local off-hours. In certain manufacturing applications, where 24-hour, 7-day shifts are maintained, even the downtime to backup the network and any active databases cannot be tolerated.

Lack of network availability causes productivity as well as business opportunity losses. For the downtime periods, productivity loss is measured by the nonproductive salary, while business opportunity loss is a percentage of revenue lost.

NDS is an extremely stable and robust distributed computing environment. The NDS architecture inherently contains several safeguards against failures, such as partitioning, replication and transaction tracking. Using DS Standard will further augment the advantages of NDS by providing additional disaster recovery planning capabilities and by reducing the costs associated with downtime.

DS Standard reduces downtime, thereby saving lost revenue and productivity costs through:

Fast disaster recovery — DS Standard's off-line database recovers a corrupted or destroyed NDS tree faster than a restore from tape backup can. In rare instances, when you cannot restore from a backup tape because of an unusually corrupted NDS database, use DS Standard to recover the NDS tree rather than re-keying the entire database.

Fast recovery from single object failures due to manual-entry errors — Since DS Standard automates redundant data entry, it prevents errors associated with manual data entry, such as omitted or erroneous information. This statement assumes a 95% accuracy rate on changes made manually versus using global search-and-replace or the template capabilities built into DS Standard.

Reduced service unavailability — DS Standard reduces service interruptions caused by real-time changes to NDS. It allows daytime modeling of all changes, followed by a single, quick, "batched", after-hours update when users are least affected.

There are three ways to measure the cost savings of using DS Standard during an NDS failure: User Productivity, Estimated Business Opportunity, and Network Administration Costs. As a conservative example of the savings resulting from using DS Standard, the tables below illustrate only the User Productivity Costs and Estimated Business Opportunity Costs. To more accurately determine the Network Administration Savings, not included below, compare the time saved when using DS Standard to the amount of time required to restore the NDS tree from tape, or in some cases, to rebuild the entire tree manually.

The effect of a partial NDS failure on the productivity of end users may vary based upon variables such as salary, task at hand during the failure, and recovery time. For demonstration purposes, we have estimated that user productivity loss due to a partial failure will cost \$1,000, \$2,000 and \$5,000 per hour for the different network sizes.

Estimated User Productivity Savings During NDS Partial Failure

Network	Annual Failures	Restore Minutes		Hours/Year		Time Saved	Cost per Hour	Savings Overall		Savings Per User	
		Tape	DS	Tape	DS			1 Year	3 Years	1 Year	3 Years
Small	5	30.0	10.0	2.5	0.8	67%	\$1,000	\$1,667	\$5,254	\$83.33	\$262.71
Medium	5	45.0	20.0	3.8	1.7	56%	\$2,000	\$4,167	\$13,135	\$16.67	\$52.54
Large	5	60.0	30.0	5.0	2.5	50%	\$5,000	\$12,500	\$39,406	\$12.50	\$39.41

Assumptions: Annual Failures = partial failures are failures to NDS objects whose unavailability affects users network-wide; recovery without DS Standard is from tape plus rekeying changes that were not reflected in the backup; as networks grow, time to restore increases due to NDS replication/partition complexity, as does the number of affected users (since a user is likely using more than one server); salaries increase 5% annually (compounded).

Estimated Business Opportunity Savings During NDS Partial Failure

Network	Annual Failures	Recover Min.		Annual Hours		Time Saved	Revenue Affected	Annual \$K	Savings Overall		Savings Per User	
		Tape	DS	Tape	DS				1 Year	3 Years	1 Year	3 Years
Small	5	30.0	10.0	2.5	0.8	67%	1%	\$2,000	\$18	\$58	\$0.92	\$2.89
Medium	5	45.0	20.0	3.8	1.7	56%	10%	\$50,000	\$5,723	\$18,043	\$22.89	\$72.17
Large	5	60.0	30.0	5.0	2.5	50%	25%	\$150,000	\$51,511	\$162,388	\$51.51	\$162.39

Assumptions: Revenues increase 10% each year (compounded).

A full NDS failure will result in more lost productivity costs than a partial failure. As with a partial NDS failure, the effects of a full NDS failure on the productivity of end users may vary based upon variables such as salary, task at hand during the failure, and recovery time. For demonstration purposes,

we have estimated that user productivity loss due to a full failure will cost \$3,000, \$6,000 and \$15,000 per hour for the different network sizes.

Estimated User Productivity Savings During NDS Full Failure

Network	Annual Failures	Restore Minutes		Hours/Year		Time Saved	Cost per Hour	Savings Overall		Savings Per User	
		Tape	DS	Tape	DS			1 Year	3 Years	1 Year	3 Years
Small	1	45.0	20.0	0.8	0.3	56%	\$3,000	\$1,250	\$3,941	\$62.50	\$197.03
Medium	1	60.0	30.0	1.0	0.5	50%	\$6,000	\$3,000	\$9,458	\$12.00	\$37.83
Large	1	75.0	40.0	1.3	0.7	47%	\$15,000	\$8,750	\$27,584	\$8.75	\$27.58

Assumptions: Annual Failures = partial failures are failures to NDS objects whose unavailability affects users network-wide; recovery without DS Standard is from tape plus rekeying changes that were not reflected in the backup; as networks grow, time to restore increases due to NDS replication/partition complexity, as does the number of affected users (since a user is likely using more than one server); salaries increase 5% annually (compounded).

Estimated Business Opportunity Savings During NDS Full Failure

Network	Annual Failures	Recover Min.		Annual Hours		Time Saved	Revenue Affected	Annual \$K	Savings Overall		Savings Per User	
		Tape	DS	Tape	DS				1 Year	3 Years	1 Year	3 Years
Small	1	45.0	20.0	0.8	0.3	56%	1%	\$2,000	\$5	\$14	\$0.23	\$0.72
Medium	1	60.0	30.0	1.0	0.5	50%	10%	\$50,000	\$1,374	\$4,330	\$5.49	\$17.32
Large	1	75.0	40.0	1.3	0.7	47%	25%	\$150,000	\$12,019	\$37,891	\$12.02	\$37.89

Assumptions: Revenues increase 10% each year (compounded).

COST AVOIDANCE

REDUCING UNNECESSARY CAPITAL EXPENDITURES

The network-centric approach of NDS provides network managers with the ability to insulate users from any hardware and software changes in the network. For example, using a Directory Map Object, network managers can quickly update the location of software on the network without editing hundreds of user login scripts or batch files. DS Standard further expands on the NDS notion of physical independence by providing network managers with off-line "What If" modeling capabilities. Using DS Standard, network managers can avoid unnecessary hardware costs by quickly modifying file rights and access privileges to reflect any given tree design, volume size, and server installation.

DS Standard can prevent unnecessary expenditures, including those for:

Network servers — Because the network is "the server", you can optimize by transparently distributing the load between individual servers. Use DS Standard to model the load placed on the network, based upon users' service locations defined in NDS; move users and the services they require between servers, distributing the network load before upgrading any hardware.

Supporting management tools — With DS Standard's comprehensive NDS disaster recovery capabilities, other management systems as well as complicated manual disaster recovery procedures (such as rekeying from documentation) become a less critical requirement.

Estimated Hardware Cost Avoidance

Network	3-Year Growth		Servers		Savings Overall		Savings Per User	
	Typical	DS	Saved	Cost Ea.	1 Year	3 Years	1 Year	3 Years
Small	1.20	1.14	5%	\$8,000	\$160	\$480	\$8.00	\$24.00
Medium	3.00	2.80	7%	\$25,000	\$1,667	\$5,000	\$6.67	\$20.00
Large	9.00	8.00	11%	\$50,000	\$16,667	\$50,000	\$16.67	\$50.00

Assumptions: Network users and usage requirements will double in size after five years.

RISK MANAGEMENT

REDUCED RISK FROM GAPS IN NETWORK SECURITY

The NDS environment provides network managers with the flexibility of defining access rights and privileges as granular as needed. Once users have successfully authenticated to the network during the login process, they can only access the resources they have privileges to. To further enforce your company's security standards and reduce the costs of risk, use DS Standard to identify and eliminate potential security breaches.

DS Standard helps secure your network through:

Reduced manual entry — Errors of omission, which result from manual modification of NDS objects, are often the main cause of security breaches on the network. DS Standard's use of templates helps capture and categorize business security rules once, for all network administrators, and can be propagated without manual rekeying to one or many users.

Reduced use of user equivalences — Using NetWare user equivalences as a shortcut for assigning one user's access rights to another causes security problems down the line. If the original user is promoted and given access to sensitive information, the second equivalenced user will also have access to that information. Using DS Standard's templates will prevent this from occurring.

Estimated Security-Breach Cost Avoidance

Network	NDS Changes		Breaches Resulting		Breaches		Savings Overall		Savings Per User	
	Freq.	Yearly	Manual	Template	Prevented	Cost Ea.	1 Year	3 Years	1 Year	3 Years
Small	1/wk.	52	0.26	0.00	100%	\$1,000	\$260	\$780	\$13.00	\$39.00
Medium	2/day	520	2.60	0.00	100%	\$5,000	\$13,000	\$39,000	\$52.00	\$156.00
Large	10/day	2600	13.00	0.00	100%	\$10,000	\$130,000	\$390,000	\$130.00	\$390.00

Assumptions: Changes = the total number of modifications made object by object (user, printer, group, and so on) over the indicated period; assume 10% of the changes involve security to high-risk areas of secure company information, and 95% accuracy for manual changes versus those made with DS Standard templates.

While not included in this analysis, DS Standard's administrative overhead savings may provide management with the opportunity to re-allocate valuable resources, moving them from basic network maintenance tasks to projects that affect the company's bottom line.

COST-SAVINGS WORKSHEET

Prepared for: _____

Prepared by: _____

1 YEAR

3 YEARS

I. Hidden Cost Savings

Single change savings per user	\$ _____	\$ _____
Mass change savings per user	\$ _____	\$ _____
Department/division re-org savings per user	\$ _____	\$ _____

II. Reduced Downtime Savings

Partial Failure:

User productivity cost savings per user	\$ _____	\$ _____
** Lost business savings per user	\$ _____	\$ _____

Full Failure:

User productivity cost savings per user	\$ _____	\$ _____
**Lost business savings per user	\$ _____	\$ _____

III. Cost-Avoidance Savings

** Hardware cost savings per user	\$ _____	\$ _____
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IV. Risk-Avoidance Savings

Security-breach cost savings per user	\$ _____	\$ _____
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Subtotal above per-user savings	\$ _____	\$ _____
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Number of users	x _____	x _____
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Subtotal above savings	\$ _____	\$ _____
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Purchase price of DS Standard	- _____	- _____
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Total Savings using DS Standard	\$ _____	\$ _____
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R.O.I. Multiple = Total Savings / DS Standard Price	<u>:1</u>	<u>:1</u>
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** These items may not be appropriate for all organizations.

Notes: _____

SAMPLE COST-SAVINGS WORKSHEET

Prepared for: **Small**

EXAMPLE: Small Network

Prepared by: **Preferred Systems, Inc.**

	<u>1 YEAR</u>	<u>3 YEARS</u>
I. Hidden Cost Savings		
Single change savings per user	\$ <u> .83</u>	\$ <u> 2.63</u>
Mass change savings per user	\$ <u> 17.31</u>	\$ <u> 54.56</u>
Department/division re-org savings per user	\$ <u> 5.29</u>	\$ <u> 16.67</u>
II. Reduced Downtime Savings		
Partial Failure:		
User productivity cost savings per user	\$ <u> 83.33</u>	\$ <u> 262.71</u>
** Lost business savings per user	\$ <u> .92</u>	\$ <u> 2.89</u>
Full Failure:		
User productivity cost savings per user	\$ <u> 62.50</u>	\$ <u> 197.03</u>
**Lost business savings per user	\$ <u> .23</u>	\$ <u> .72</u>
III. Cost-Avoidance Savings		
** Hardware cost savings per user	\$ <u> 8.00</u>	\$ <u> 24.00</u>
IV. Risk-Avoidance Savings		
Security-breach cost savings per user	\$ <u> 13.00</u>	\$ <u> 39.00</u>
Subtotal above per-user savings	\$ <u> 191.41</u>	\$ <u> 600.21</u>
Number of users	x <u> 50</u>	x <u> 50</u>
Subtotal above savings	\$ <u>9,571.00</u>	\$ <u>30,011.00</u>
Purchase price of DS Standard	- <u> 695.00</u>	- <u> 695.00</u>
Total Savings using DS Standard	\$ <u>8,876.00</u>	\$ <u>29,316.00</u>
R.O.I. Multiple = Total Savings / DS Standard Price	<u> 13:1</u>	<u> 42:1</u>

** These items may not be appropriate for all organizations.

Notes: Results above are a sample of running a small network with 50 users.

Reference contacts are available through Preferred Systems, Inc. Sales Department.

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