

NAS RAID Planning Checklist

Before You Buy Drives or Build a NAS

1 KNOW YOUR DATA VOLUME

Current data size: _____ TB

Expected 3-year growth: _____ TB

Target usable capacity: _____ TB

*Most home NAS users underestimate growth.
 Double your current data as a starting point.
 Target usable = 1.5–2× current data size.*

2 CHOOSE YOUR RAID LEVEL

RAID 1 ↓ mirror 1 usable	RAID 5 ↓ parity N-1 usable	RAID 6 ↓ double parity N-2 usable
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- 2-bay → RAID 1
- 4-bay Synology → SHR commonly used (supports mixed drives)
- 4-bay QNAP → RAID 5 commonly used
- 5+ bay, business-critical → RAID 6 (tolerates 2 simultaneous failures)

⚠ RAID protects uptime, not data loss — plan backup separately

3 SELECT YOUR DRIVES

- CMR only — avoid SMR drives in RAID
- NAS-rated drives (IronWolf, WD Red Plus, Toshiba N300)
- All drives same capacity (unless using SHR)
- Compatibility confirmed
synology.com/compatibility or qnap.com/compatibility

REBUILD RISK REFERENCE

TYPE	TOLERANCE	REBUILD (4TB)	RISK
RAID 1	1 drive	~4–6 hr	LOW
RAID 5 / SHR	1 drive	~12–24 hr	HIGH
RAID 6 / SHR-2	2 drives	~18–36 hr	MEDIUM
RAID 10	1/mirror	~4–8 hr	LOW
RAID 0	None	N/A	NO REDUNDANCY

Large drives = longer rebuild time = higher risk window.
 Times approximate at ~100 MB/s sustained read.

4 CALCULATE USABLE STORAGE

- Confirmed usable capacity using:
needtoknowit.com.au/tools/raid-calculator/
- Usable capacity meets 3-year target



Scan to open RAID Calculator

CAPACITY QUICK CALC (4 drives)

- 4 × 4TB, RAID 5 = **12 TB** usable
- 4 × 8TB, RAID 5 = **24 TB** usable
- 4 × 8TB, RAID 6 = **16 TB** usable
- 4 × 12TB, RAID 6 = **24 TB** usable

5 REBUILD RISK

- Large drives = longer rebuild time (higher risk window)
- Hot spare considered if array is business-critical
- Drive failure risk checked:
needtoknowit.com.au/tools/drive-failure-risk/

6 BACKUP PLAN

- RAID failure scenario identified (ransomware, controller failure, theft)
- Off-site backup method chosen (cloud or USB rotation)
- 3-2-1 rule: 3 copies, 2 media types, 1 off-site

⚠ RAID protects uptime, not data loss.

MORE FREE NAS PLANNING TOOLS

needtoknowit.com.au/tools – RAID Calculator · Power Calculator · Backup Calculator
 Drive Failure Risk · NAS Sizing Wizard · Transfer Speed Estimator · UPS Runtime Estimator

Need to Know IT

Independent Australian storage guidance
needtoknowit.com.au