Lending Against Machines Nobody Appraises

What GPU-Backed Credit Facilities Disclose, 2025 to 2026

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Abstract

Between July 2025 and October 2026, AI cloud operators borrowed tens of billions of dollars in facilities described as secured by graphics processors. This paper reads the public record for eleven of them, plus one corporate secured facility included as a comparator, and codes what each discloses. The record comprises issuer releases, SEC Form 8-K and 6-K filings, registration statements, rating-agency releases and, for one facility, the full credit agreement. Pricing is always disclosed. In this sample it sorts cleanly by the credit of the customer behind the loan. Facilities tied to investment-grade contracts priced at SOFR plus 2.25 to 3.00 percentage points, or 5.9 to 6.8 percent fixed, while facilities tied to sub-investment-grade or unrated customers priced at SOFR plus 4.00 to 5.50, or 9.0 to 9.95 percent fixed. What the record does not contain is any figure that would let an outside reader value the machines themselves. No facility in the sample discloses an advance rate against appraised value, a market residual value assumption, an obsolescence or refresh covenant, or any verification by a party other than the borrower that the collateral exists and performs. The one credit agreement read in full defines a six-year straight-line depreciated amount for the GPUs and requires the borrower to report rack serial numbers and installation progress, which is the closest the record comes. Three disclose a loan-to-cost figure. One discloses that renewal and re-lease criteria exist, with their key term redacted. Data-centre securitisations rated by the same agencies report appraised loan-to-value, capitalisation rates and haircuts as a matter of routine. The paper argues that these instruments are priced as contract credit and described as asset-backed, and proposes five disclosure fields that would let the collateral be priced in its own right.

Keywords: GPU-backed debt; asset-backed finance; private credit; collateral valuation; disclosure; AI infrastructure.
JEL: G21, G23, G32, L86.

1 Introduction

A delayed-draw term loan to an AI cloud operator is usually described in one line, as secured by GPU servers and the contracted cash flows they generate. Lenders, rating agencies and the financial press repeat it. The phrase joins two very different kinds of security. One is a promise by a customer to pay. The other is a rack of machines whose market value falls with every new chip generation.

Which of the two is doing the work? The question matters to anyone holding the paper, and it will matter more as these loans move from bank syndicates to insurers and fixed-income funds.

On 1 October 2026 one borrower described its new facility as marketed to insurance companies and fixed income investors [1].

This paper answers the question from the public record alone. It codes eleven GPU-secured facilities and one corporate comparator against thirteen fields, separates what is disclosed from what is not, and compares the result with the disclosure that the same rating agencies require for data-centre securitisations. The finding is simple to state. Price follows the customer. The collateral, as far as any outside reader can tell, is not valued at all.

2 Related work

Two free public trackers now list GPU-related financings with links to sources. American Compute's GPU Financing Tracker covers 110 public debt, lease and structured financings and concludes that pricing follows the customer, not the GPU [2]. The Compute Credit Index Research GPU Debt Tracker covers 44 deals, or 46 instruments, and observes that no GPU loan prices the hardware at a market residual [3]. An October 2026 analysis of three facilities lists the terms each leaves out [4]. This paper differs in scope and purpose. It codes disclosure field by field from primary documents, sets the result against a mature comparison class, and proposes a standard.

The literature on collateral explains why this matters. Loans secured by more redeployable aircraft carry lower spreads, higher loan-to-value ratios and longer maturities [5], and nineteenth-century railroads with more saleable track borrowed at longer maturities [6]. In both cases the lender could estimate what the collateral would fetch in another user's hands. GPU servers do not yet have a secondary market deep enough, or a published appraisal record, to support that estimate.

3 Sample and coding

The sample is eleven facilities described as secured by GPUs, signed between July 2025 and October 2026, for which pricing and the main terms appear in a primary document, whether an issuer release, an SEC filing or a rating-agency release. A twelfth, Nebius's $3.5 billion facility with Citi, is a corporate senior secured facility whose proceeds fund data centres and GPUs. It is not described as GPU-secured and is included only as a comparator. Table 1 lists all twelve. Where a term appears only in a secondary source, the table says so.

Each facility is coded on thirteen fields. A field is marked disclosed if the reviewed documents state it, partly disclosed if they state that the term exists but not its value, and not found otherwise. The coding is of the public record. Credit agreements filed as exhibits run to more than a hundred pages. The coding rests on the filings' summaries of those agreements, on issuer and lender releases and on rating announcements. One agreement, for CoreWeave's DDTL 4.0, was read in full [7], and its terms are coded from the agreement. A term absent from this record may still sit in a schedule of an agreement or in a confidential side letter. That is part of the point, because an investor in a fund that buys this paper sees the same record.

4 What is disclosed

Pricing. All twelve disclose a margin or a coupon. Figure 1 plots them. The ordering follows the customer, not the machine. CoreWeave's DDTL 4.0, backed by a single investment-grade customer and rated A3 by Moody's and A (low) by Morningstar DBRS, priced at SOFR plus

Borrower and facility	Signed	Size (USD)	Price	Maturity	Rating	Customer
CoreWeave DDTL 3.0 [8]	Jul 2025	2.6bn	SOFR + 4.00	Aug 2030	Not stated	A customer contract
CoreWeave DDTL 4.0 [7, 9]	Mar 2026	8.5bn	SOFR + 2.25; c. 5.9% fixed	Mar 2032	A3 / A (low)	One investment-grade customer
Nscale GPU facility [10]	Feb 2026	c. 1.4bn	Term SOFR + 5.00	5 yrs after availability	Not stated	Take-or-pay contracts
CoreWeave DDTL 5.0 [11, 12]	May 2026	3.1bn	SOFR + 4.50	Nov 2031	Ba2 / BB+	Two non-IG customers
IREN Hardware 3 [13]	May 2026	1.5bn DDTL + 2.1bn notes	SOFR + 2.25; 5.96%	Dec 2031	Not found	Microsoft contract
Nebius Compute II [14]	Jul 2026	c. 775m	Term SOFR + 2.50	Oct 2030	Not stated	One investment-grade customer
CoreWeave DDTL 5.5 [15]	Aug 2026	2.6bn	Term SOFR + 5.50	Sep 2031	Ba2 / BB+	Contracts averaging c. 3 years
Lambda TLB [16]	Aug 2026	926m	SOFR + 3.00, OID 99.5	Dec 2030	Baa2	One investment-grade offtaker
IREN Mackenzie [17]	Aug 2026	2.4bn	9.0% fixed	Not found	Not stated	Non-investment-grade customers
Lambda Compute I [1]	Oct 2026	1.008bn	6.78% fixed	May 2033	A (low) / Baa1	Two investment-grade offtakers
Sharon AI SPV [18]	Oct 2026	356m	9.95% fixed, excl. fees	Not found	Not stated	Contracts, TCV over 8.8bn
Nebius / Citi (comparator) [19]	Oct 2026	3.5bn	Term SOFR + 2.75 to 3.50	364 days	Not stated	Corporate; proceeds for data centres and GPUs

Table 1. The sample, with the primary source for each row. Nebius / Citi is a corporate secured facility included as a comparator.

2.25 [9]. CoreWeave's DDTL 5.5, signed by the same borrower five months later, priced at Term SOFR plus 5.50. Its customer contracts average about three years against a loan of about five [15]. Same borrower, a spread 3.25 points wider. Among fixed-rate deals the same gap appears in another unit, 6.78 percent for Lambda's facility backed by two investment-grade offtakers [1] against 9.95 percent, before fees, for Sharon AI's first SPV facility [18].

Customer credit. Eleven of twelve say something about the customer, from a name (Microsoft) to a rating band or a bare reference to a customer contract. This is the most informative field in the record, and issuers clearly know it.

Coverage tests. Six disclose a debt-service coverage covenant and five give its level. The Nscale facility states the covenant without its threshold [10]. DDTL 3.0 requires 1.40 times from April 2027, and also a contract realisation ratio of at least 0.85 times, tested monthly [8]. DDTL 5.0 requires at least 1.35 times once its commitments are drawn or from 30 September 2026, whichever is earlier [11]. IREN's Hardware 3 facility requires 1.05 times, with mandatory prepayment if the ratio stays below 1.10 for six months [13]. DDTL 4.0 sizes repayment so that a projected ratio, taken from a base case model, stays at or above 1.20 [7]. DDTL 5.5 requires a coverage ratio of at least 1.35 from early 2027 [15] and, according to one reading of the agreement, a projected ratio of at least 1.35 after its renewal deadline [4]. These are cash-flow tests. They measure the contract, not the collateral.

Loan-to-cost. Three facilities disclose how much of the hardware cost the loan funds. IREN's Hardware 3 agreement forces prepayment if loan-to-cost exceeds 65 percent [13]. IREN states that the Mackenzie facility funds 90 percent of the associated GPU capital expenditure [17]. Nebius states that the facility and the customer's cash flows together cover more than 100

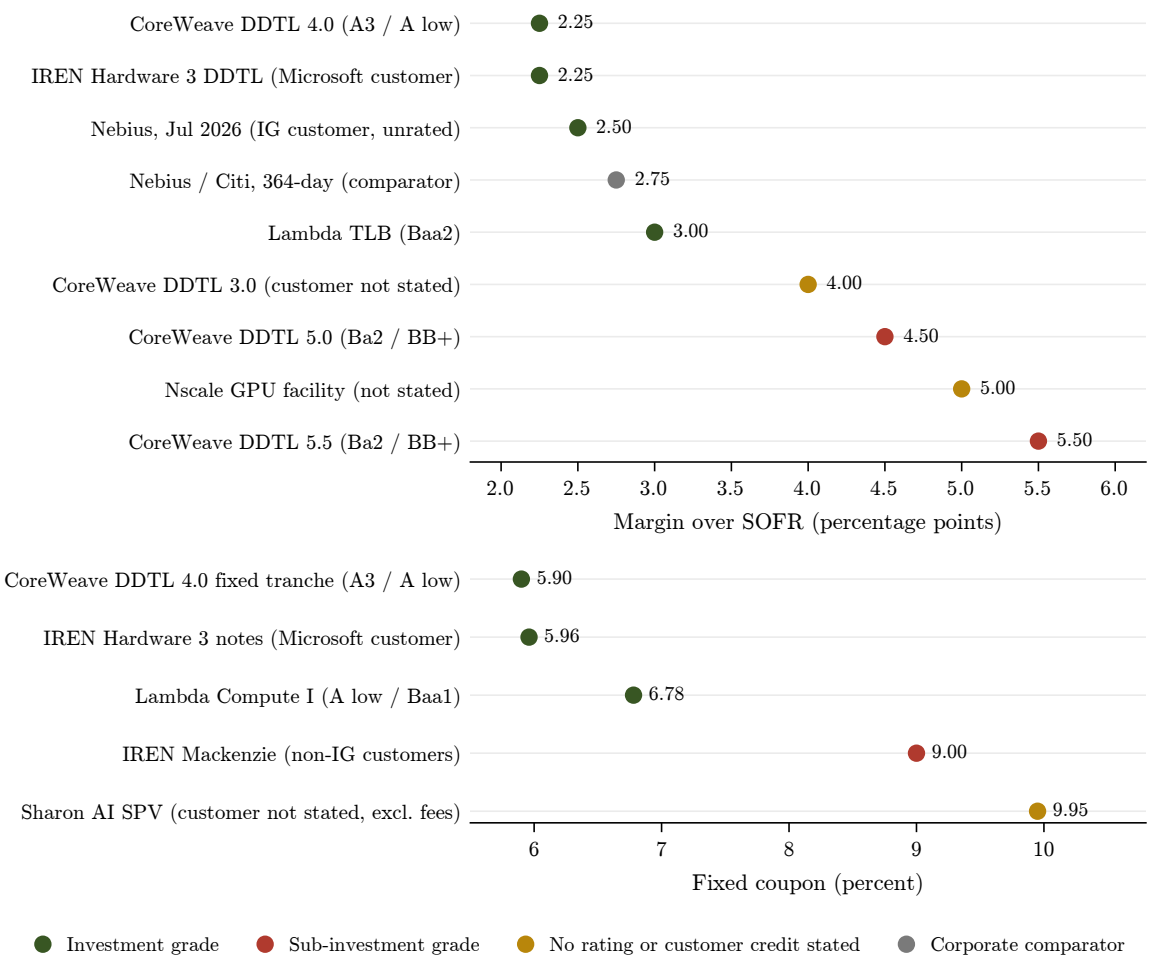


Figure 1. Pricing by facility. Colour shows the facility rating where one exists and the customer's credit where the facility is unrated. Green marks investment grade, red sub-investment grade, amber a facility with neither a rating nor a stated customer credit, and grey the corporate comparator.

percent of the capital expenditure [14]. Cost is a historical number. It says what was paid, not what the machines would fetch.

5 What is not disclosed

Table 2 shows the gap. Four fields are empty across the whole sample, although the one agreement read in full comes close on two of them.

	CW 3.0	CW 4.0	Nscale	CW 5.0	IREN HW3	Nebius 775m	CW 5.5	Lambda TLB	IREN Mack.	Lambda CI	Sharon AI	Nebius/Citi	Count
Pricing	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	12
Maturity	✓	✓	○	✓	✓	✓	✓	✓	·	✓	·	✓	10
Customer credit	○	✓	○	✓	✓	✓	○	✓	✓	✓	○	·	11
Rating	·	✓	·	✓	·	·	✓	✓	·	✓	·	·	5
Parent recourse	✓	✓	✓	✓	✓	·	✓	·	·	·	·	·	6
DSCR covenant	✓	✓	○	✓	✓	·	✓	·	·	·	·	·	6
Amortisation profile	·	·	○	·	○	·	·	✓	·	✓	·	·	4
Loan-to-cost	·	·	·	·	✓	✓	·	·	✓	·	·	·	3
Re-lease or renewal terms	·	·	·	·	·	·	○	·	·	·	·	·	1
Advance rate vs. appraised value	·	·	·	·	·	·	·	·	·	·	·	·	0
Market residual value assumption	·	·	·	·	·	·	·	·	·	·	·	·	0
Refresh or obsolescence covenant	·	·	·	·	·	·	·	·	·	·	·	·	0
Independent verification of collateral	·	·	·	·	·	·	·	·	·	·	·	·	0

Table 2. Disclosure in the reviewed documents. ✓ disclosed; ○ partly disclosed; · not found. CW denotes the CoreWeave delayed-draw facilities. Counts include partial entries. The last column of facilities is the corporate comparator.

Advance rate against appraised value. No facility states what fraction of an independently appraised value has been lent. Without it, a reader cannot tell whether a fall in the second-hand price of a GPU generation leaves the lender covered.

Residual value. No facility states the market value the machines are assumed to hold at maturity. The closest figure is a six-year straight-line "GPU Depreciated Amount" defined in the DDTL 4.0 credit agreement [7]. It matches CoreWeave's accounting life for the equipment. It is a schedule, not an estimate of what the machines would fetch, and the redacted schedules leave its operative use unclear.

Refresh or obsolescence. No facility describes a covenant triggered by a new hardware generation, a fall in rental rates for the financed generation, or a decline in measured utilisation.

Verification. No facility describes a check by a party other than the borrower that the financed servers exist at the stated sites, are installed, are serviceable or deliver the performance the contract assumes. DDTL 4.0 does require the borrower to report rack serial numbers within 60 days of each draw, to deliver monthly construction and installation reports and quarterly operating reports, and to give the agent inspection rights [7]. These are borrower attestations backed by a right to inspect, not routine independent checks. Rating releases mention delivery, acceptance and service-availability risk [4], which shows the agencies see the issue. The record does not show how it is checked.

One facility comes close on a related field. CoreWeave's DDTL 5.5 lets the borrower renew existing contracts or re-release capacity to other customers, subject to criteria in the credit agreement [15]. The length of the renewal deadline is redacted [4]. This is the only facility in

the sample whose lenders explicitly take re-leasing risk, and it is priced accordingly.

6 A comparison class

The same agencies rate data-centre securitisations, and there the collateral is valued in the open. Morningstar DBRS's 2025 confirmation of the Vantage Data Centers Jersey notes reports a loan-to-value of 57.8 percent against a GBP 1.1 billion appraisal, its own capitalisation and discount rate assumptions, and an 8.7 percent haircut of its net present value to the appraiser's figure [20]. A reader can disagree with every one of those numbers. The point is that they exist.

GPU facilities and data-centre securitisations often finance the same campuses. The building is appraised. The machines inside it are not.

7 Interpretation

Taken together, the record supports one reading. These facilities are priced and rated as contract credit. The servers are pledged, and the pledge matters in a bankruptcy, but nothing public lets an outside reader assign the pledge a value. Calling the paper asset-backed describes its legal form. It does not describe how it is priced.

That is not a criticism of the lenders, who are pricing the risk they can see. It becomes a problem in three situations. When a customer contract ends before the loan does, as in DDTL 5.5, the tail of the loan rests on machines whose value nobody has published. When the paper is resold to investors who were not in the room, the only information they inherit is the record coded here. And when the market tries to finance GPUs for customers without investment-grade contracts, there is no published collateral value to lend against, which is consistent with the 9.0 to 9.95 percent fixed coupons in the sample.

The pattern has an analogue in other young asset classes. Before an asset can carry capital on its own, someone has to be able to measure it independently. Companion work by the author makes the same argument for spectral measurements in pharmaceutical and bioprocess settings, where a model's prediction is trustworthy only if the instrument that produced the input can be shown to be within its validated envelope [21].

8 A minimum disclosure standard

Five fields would let GPU collateral be priced in its own right. Each can be published without revealing customer identities or pricing.

1. Appraised value of the financed equipment at closing, the appraiser, and the appraiser's independence from borrower and arranger.
2. Advance rate against that appraisal, at closing and as a covenant.
3. The residual value curve assumed by generation and age, with the source of the curve.
4. Re-lease and renewal criteria, including the haircut applied to uncontracted capacity.
5. A verification protocol covering serial-level existence, installation and acceptance attestations, and periodic utilisation and performance telemetry from a party other than the borrower.

None of these is novel in asset finance. Data-centre securitisations publish loan-to-value and capitalisation rates [20], and lending against more redeployable assets, such as aircraft, rests on estimates of what the collateral would fetch in another user's hands [5]. The fifth field is the one without a ready model, because no market yet produces an independent, machine-readable record of whether a GPU cluster is doing what the contract says.

9 Limits

The sample is eleven GPU-secured facilities and one comparator, chosen because their terms are public. Only one credit agreement was read in full. Others may contain terms like those found in DDTL 4.0. Private facilities and facilities disclosed only through press reports are excluded, and they are likely to disclose less. Some fields are coded from issuer releases, which are written to market the transaction. Confidential schedules may contain advance rates and residual assumptions that the public record omits; if so, the finding becomes one about what investors downstream of the original lenders can see, which is the finding that matters for resale. Ratings were taken as reported and their methodologies were not reviewed in full.

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No external funding was received. The author declares no financial interest in any company named and no commercial interest in compute-credit data, verification or advisory services.

References

[1] Lambda, Inc. (2026b). Lambda closes $1 billion senior secured fixed rate financing. Press release, 1 October 2026. https://lambda.ai/blog/lambda-closes-1-billion-senior-secured-fixed-rate-financing

[2] American Compute (2026). GPU Financing Tracker. Updated 10 October 2026. https://www.amcompute.com/gpu-financing-tracker

[3] Compute Credit Index Research (2026). GPU Debt Tracker. As of 12 November 2026. https://ccir.io/credit

[4] Laurelli, O. (2026). GPU-backed debt: pricing the fourth year. l0g.fr, 5 October 2026. https://l0g.fr/en/analysis/gpu-backed-debt-fourth-year/

[5] Benmelech, E., and Bergman, N. K. (2009). Collateral pricing. *Journal of Financial Economics*, 91(3), 339-360.

[6] Benmelech, E. (2009). Asset salability and debt maturity: Evidence from nineteenth-century American railroads. *Review of Financial Studies*, 22(4), 1545-1584.

[7] CoreWeave, Inc. (2026b). Credit Agreement, CoreWeave Compute Acquisition Co. VIII, LLC. Exhibit 10.11 to Form 8-K, March 2026. https://www.sec.gov/Archives/edgar/data/1769628/000176962826000129/ex1011.htm

[8] CoreWeave, Inc. (2025). Form 8-K, 31 July 2025: Credit Agreement among CoreWeave Compute Acquisition Co. V, LLC and Co. VII, LLC, dated 28 July 2025. https://www.sec.gov/Archives/edgar/data/1769628/000176962825000033/crwv-20250728.htm

[9] CoreWeave, Inc. (2026a). CoreWeave closes landmark $8.5 billion financing facility, achieving first investment-grade rated GPU-backed financing. Press release, 30 March 2026. https://www.businesswire.com/news/home/20260330529766/en/

[10] Nscale plc (2026). Form S-1/A, 12 November 2026. https://www.sec.gov/Archives/edgar/data/0002110365/000119312526458722/ck0002110365-20261112.htm

[11] CoreWeave, Inc. (2026d). Form 8-K and Credit Agreement for the $3.1 billion DDTL 5.0 facility, 18

May 2026. https://www.sec.gov/Archives/edgar/data/1769628/000176962826000236/crwv-20260515.htm

[12] CoreWeave, Inc. (2026e). Press release on the $3.1 billion DDTL 5.0 facility, 18 May 2026. https://www.businesswire.com/news/home/20260518337916/en/

[13] IREN Limited (2026a). Form 8-K on the Hardware 3 financing agreements dated 29 May 2026, filed 1 June 2026. https://www.sec.gov/Archives/edgar/data/1878848/000114036126023427/ef20075181_8k.htm

[14] Nebius Group N.V. (2026a). Nebius raises $775 million in first secured debt financing. Press release and Form 6-K, 17 July 2026. https://nebius.com/newsroom/nebius-raises-775-million-in-first-secured-debt-financing-to-accelerate-global-buildout

[15] CoreWeave, Inc. (2026c). Form 8-K and press release on the $2.6 billion DDTL 5.5 facility, 10 August 2026. https://www.sec.gov/Archives/edgar/data/1769628/000176962826000357/crwv-20260807.htm

[16] Lambda, Inc. (2026a). Lambda closes $926 million senior secured term loan B facility. Press release, 27 August 2026. https://lambda.ai/blog/lambda-closes-926-million-senior-secured-term-loan-b-facility

[17] Blue Owl Capital (2026). Blue Owl managed funds lead $2.4 billion AI factory financing for IREN. Press release, 28 August 2026; and IREN Limited, FY2026 results, 27 August 2026.

[18] SharonAI Holdings Inc. (2026). Sharon AI enters into GPU-backed debt facility. Press release, 1 October 2026.

[19] Nebius Group N.V. (2026b). Nebius secures $3.5 billion financing facility with Citi. Press release, 22 October 2026. https://nebius.com/newsroom/nebius-secures-3-5-billion-financing-facility-with-citi

[20] Morningstar DBRS (2025). Confirmation of credit rating on notes issued by Vantage Data Centers Jersey Borrower SPV Limited. 23 May 2025. https://dbrs.morningstar.com/research/454685

[21] Sadineni, A. C. (2026). Spectral Passport: When does a Raman model's uncertainty guarantee survive a change of instrument? Preprint, November 2026. https://doi.org/10.5281/zenodo.24210927